

**NUER NOUN MORPHOLOGY**

by

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## **Abstract**

For this thesis, nominative singular, nominative plural, genitive singular, genitive plural, locative singular and locative plural forms were collected for 264 nouns in Nuer, a Western Nilotic Nilo-Saharan language spoken in the Sudan and Ethiopia. A productive morphological rule was identified for the derivation of these forms using nonce words, and a detailed analysis was performed on irregular data. Nuer noun case and number morphology is shown to have an extremely high level of irregularity – in excess of 75% of nominative singular and plural pairs. The implications of applying a declension class analysis are investigated, and it is shown that such a hypothesis would prove unwieldy, requiring 207 declension classes for the 264 nouns collected. An account is given for the structure and distribution of irregular forms and implications for morphological theory are proposed.

"For sheer complexity or irregularity in nominal morphology, however, it is hard to beat a number of Nilo-Saharan languages. Because of very limited direct experience and the paucity of extensive descriptions by others that can be confirmed as reliable, no adequately representative treatment is attempted here."

-Wm. E. Welmers-  
pp. 239, African Language Structures

## 1 Introduction

Nuer is a language spoken in southern Sudan. It is, along with Dinka, its closest relative, a member of the Western Nilotic branch of Nilo-Saharan languages. The dialect of Nuer that will be investigated in this paper is Eastern Nuer<sup>1</sup>, specifically such as is spoken in Nasir, Sudan, near the Ethiopian border. The purpose of this thesis is twofold: first, to address the "paucity" mentioned in the quote above by descriptively investigating the morphology of the Nuer noun with regards to case (nominative, genitive and locative) and number (singular and plural), and second, to point out the importance of these data for morphological theory and to point out avenues for future research. This

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<sup>1</sup> My consultant for all Nuer data, Ruey Look Dui, grew up in Nasir, in the eastern Sudan and left when his situation there became dangerous. He has lived in Buffalo, NY since 1994 with his wife and four children. Living in the United States, he still has frequent contact with other Nuer who live in the western New York area, as well as occasional visitors from the mid-west, where there are larger populations of Nuer refugees. The data in this paper were collected in a two semester Field Methods class (Prof. Matthew Dryer, Fall 1997/Spring 1998) and in subsequent private elicitations both at the State University of New York at Buffalo and at Ruey's home. I would like to acknowledge the support of a Professional Development and Quality of Work Life Individual Development Award which was awarded to Prof. Matthew Dryer and administered by the Governor's Office of Employee Relations and United University Professions at the State University of New York at Buffalo.

investigation bears upon the purpose of linguistic inquiry as a classificatory or descriptive science. The noun data that I will introduce show a level of irregularity which is quite unusual. By means of example, in the case of the relationship between nominative singulars and plurals, the most common pattern between such forms accounts for only a slim 23% of the data.

## **2 Background**

This section of the thesis will give some background on Nuer, the linguistic and anthropological work in the literature, the consonant phonemes, vowel phonemes and phonotactics of the language.

### **2.1 Literature Review**

In this section I will review the literature on Nuer, from a linguistic point of view, but also from an anthropological perspective, as many of the references to Nuer as a language are present in anthropological works. The first description of the Nuer language, a grammar, (Crazzolara 1933) is a remarkably good work for its time and contains a greatly simplified description of the same phenomena presented here – one of only two other systematic descriptions of this process that I could find for Nuer. I will discuss Crazzolara's treatment in sections 3.2.1.9 and section 3.3.

E. E. Evans-Pritchard (1940) published his ethnography on the Nuer, a work which has had great significance in the field of anthropology. Besides its non-linguistic interest, this work, as well as two other ethnographic works he wrote, (Evans-Pritchard 1951, 1956) was useful for eliciting words that I might not otherwise have known to look for, such as *luak* 'cattle barn' and *kuoth* 'divinity', or 'god'. Later, a dictionary was published (Kiggen 1948), which contains a short grammatical description of Nuer, but it was not as helpful as might be hoped, due to its gross simplification of the vowel system; also the dialect presented seems to differ quite a bit from that of my consultant. Many, if not most of the nouns I took from this work were not immediately recognized by my consultant. In a grammar of Dinka (Nebel 1948) (Nuer's closest relative, spoken by a neighboring tribe of the same name), a description of the noun morphology appears which bears strong resemblances to the description I will give below for Nuer, though like Crazzolara's description, it is quite simplified. Welmers (1973) makes a brief mention of the Nuer noun morphology, and I will return to this when I return to Crazzolara's. Torben Anderson (1992) wrote a paper on a superficially similar morphological system in Dinka verbs. It should be clear by the end of this thesis that a similar treatment of Nuer nouns is unfortunately not possible. One of the major

descriptive challenges with regards to Nuer is accurately describing the complex vowel phonemes. A paper was published to address this very issue (Yigezu 1995), which proved useful in assessing the accuracy of my consultant's phonemicization. In 1996 an updated ethnography of the Nuer was published (Hutchinson 1996) including a liberal sprinkling of Nuer words which I found to be helpful in elicitation. Her notes on the phonology of the language (pp. xv-xvii) also proved useful. Other linguistic and anthropological work on Nuer has been hard to come by. There was a 1970 video ethnography called *The Nuer*, a 1994 Summer Institute of Linguistics (SIL) reader with the laudable goal of promoting Nuer language literacy among the Nuer (Puoc et al. 1994), and a quite impressive anthropological work in Johnson (1997)'s study of prophets in Nuer society. A very small Nuer-English dictionary (Huffman 1927, 1997) contains a useful but brief description of the facts presented here as well.

Of all the works cited above, only Crazzolara (1933) Nebel (1948), Welmers (1973) and Huffman (1997) contain explicit descriptions of Nuer or Dinka noun morphology, and we will see that these treatments are quite brief and imprecise. I will return to these other analyses several times throughout the current study as they are relevant to the study I

conducted. This study is significant inasmuch as it is the first systematic collection and detailed description of Nuer noun data. Attention will be given throughout the paper to providing a description which can be used for purposes which are as yet unknown to the author, without neglecting to point out ways in which this data may be relevant to linguistic theory today.

## 2.2 The Phonology

### 2.2.1 Consonants

There are 20 consonant phonemes in Nuer, occurring at five major points of articulation. Particular points of interest here are the almost complete lack of fricative phonemes ( $\gamma$  is perhaps a marginal phoneme with only a few occurrences in the data I collected), and the presence of an inter-dental stop series.

**Table 1**  
**Nuer Consonants**

	Labials		Inter-Dentals		Alveolars		Palatals		Velars		Pharyngeals	
	IPA		IPA		IPA		IPA		IPA		IPA	
Voiceless	p	p	th	?	t	t	c	c	k	k		
Voiced	b	b	dh	?	d	d	j	j	g	g		
Fricatives											$\gamma$	h
Nasal	m	m	nh	?	n	n	ny	ɲ	ŋ	ŋ		
Liquid					r, l	r, l						
Glides	w	w					y	j				



The first column for each place of articulation in Table 1 contains the symbol (or symbols, for digraphs) used by my speaker and throughout this paper for each sound (this will be more clearly examined in Section 2.2.3 below, *The Orthography*). In the second column, the International Phonetic Alphabet symbol for each symbol is written. Note that the differences between these symbols are occasionally quite unconventional (writing /ɣ/ for /ħ/, for example). I have placed question marks in the IPA column of the interdental stops because there is no IPA symbol for the interdental stop of which I am aware. Ladefoged (1993) lists /t̪/, /d̪/, and /n̪/ as dental stops, as in French, but the sound in Nuer is somewhat different. Further phonetic study would be needed to determine the point of articulation with any precision, but this stop seems to be articulated somewhere between the /t̪/ (c.f. French) and the /θ/ (c.f. English).

There are other phonemicizations that have been proposed for Nuer in the past, and the work here differs from each of these in slight ways. This is perhaps to be expected given the complexity of its phonemic system and the frequent misunderstandings that have arisen in its study. The orthography used in Crazzolara's (1933) grammar of Nuer varies somewhat from the phonemicization given above,

usually listing separately allophones of phonemes that I have given above. No doubt, this is due to the fact that Crazzolara was apparently unfamiliar with the concept of the phoneme. Because of this, his description refers to the *sounds* of Nuer rather than its phonemes. Crazzolara proposes /b/, /f/, /p/, /pf/ and /w/ as the class of bilabial sounds. Of the /p/, he says, "the rare /p/ is not very difficult to perceive, as a rule, but whether a /b/ or /f/ is pronounced, it is often hard to say". These sounds are clearly allophones of /p/, a notion which finds support in the fact that Nuer speakers are disposed to difficulties in the pronunciation of /p/'s and /f/'s in English, often mixing them up.

It seems that the degree of frication or affrication is not phonemic with regards to /p/ (or to any other stops) in Nuer. This is not surprising given that there are not any fricative or affricate phonemes in the inventory. [s]s, [v]s and [ç]s are found frequently in Nuer as allophones, and are consistently spelled /th/, /b/ and /c/ respectively by my Nuer consultant.

Another phonemicization is given in Kiggen (1948). He proposes 22 consonant phonemes compared to Crazzolara's 26, differing from the 20 given here only by his inclusion of a voiceless alveolar trill and a voiceless /h/, the first of

which I have been unable to find, and the second of which I include with the /ɣ/.

In a picture book designed to teach the Nuer orthography, (Puɔc 1994) and in a recent dictionary (Huffman 1997), the consonants are delineated exactly as given here. Yigezu (1995) proposes the same consonant orthography given here except the /ɣ/ is given as a /h/. There is another orthography proposed by Hutchinson (1996) (an excellent modern ethnography and revision of Evans-Pritchard's (1940) famous ethnography) in which she adopts the same consonants as I propose here, except that she distinguishes /ɣ/ and /h/.

### 2.2.2 Vowels

The vowel system is quite complicated in Nuer. The vowels used in my speaker's orthography are given in Table 2.

**Table 2**  
**Nuer Vowels**

<b>Non-Breathy</b>	i	ɛ			a		ɔ	o		
<b>Breathy</b>	<u>i</u>	ë	e	ë	ä	<u>a</u>	<u>ɔ</u>	ö	<u>o</u>	u

Those characters with dots above or a line under them, together with /u/, form the breathy class of vowels in Nuer. There is no non-breathy equivalent of /u/, except where /u/

participates as the first vowel in a diphthong, where the second half of the vowel nucleus is non-breathy. The others comprise the non-breathy or modal phonation type. The characters /a/ and /o/ appear with both diacritics, dots and a line. There is a difference in place between these breathy vowels (/ä/ and /a̰/, /ö/ and /o̰/); dots (rather than a line) represent the breathy equivalent of the modal vowel. In IPA symbols, /a/ is IPA /a/, with /ä/ its breathy equivalent, and /a̰/ is closer to IPA /æ/. Likewise, /o/ is IPA /o/, with /ö/ its breathy equivalent, and /o̰/ is closer to IPA /ṵ/.

Vowel length in Nuer is phonemic and is represented in the orthography by writing the vowel twice as in *rööth*, 'hippos'. There are two issues to be discussed here. First, are long vowels monosyllabic or disyllabic? Second, there is the question of whether these are sequences of identical vowels (as the orthography might suggest and as was argued for in Yigezu (1995)) or underlying long vowels. I will remain basically agnostic on both issues, although I believe that there is evidence that long vowels are monosyllabic and underlying rather than disyllabic and/or sequences. An argument that applies to both these positions comes from the phonotactics of Nuer. Most Nuer noun roots,

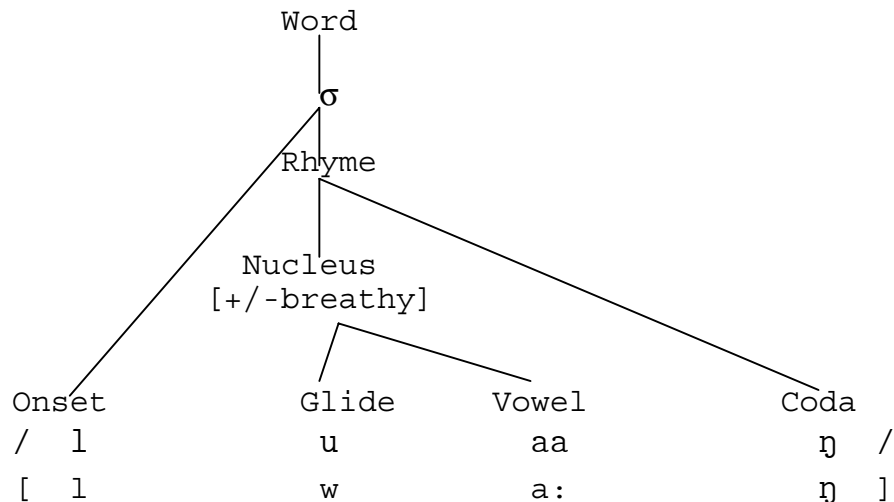
indeed most Nuer roots in general, are monosyllabic (borrowings and compounds notwithstanding), and generally are of one of the following forms:

$$(1) \quad C_1(V_1)*V_2C_2 \quad \text{or} \quad C_1V:C_2$$

\*where  $V_1$  is /i/, /o/, /u/, /i/, or /ɔ/.

In diphthongs, breathiness is a property of the syllable nucleus as a whole, never a property of only one of the two vowels. A word with a large nucleus, *luaaŋ* 'fly.nom.sg', can be diagrammed as in Figure 1.

**Figure 1: Word/Syllable Structure of *luaaŋ***



This generalization can be most elegantly captured if we assume long vowels to be monosyllabic. As for the second question, note that we need one vowel place instead of two in the diagram above if we assume underlying long vowels

instead of vowel sequences. Underlying long vowels give us an explanation for why we don't find triphthongs in Nuer. If the word in Figure 1 had a sequence of /a/s in the vowel position, we might as easily expect any other sequence of vowels to occur with a glide to yield a triphthong. In fact, these are not attested in the data. The only word which appears to violate the phonotactic analysis given above is *biɪɛl*, 'bee.nom.plur'. I do not have an account for this seemingly exceptional word.

There is considerably less agreement in the literature about vowel phonemes than there is about consonant phonemes. Crazzolara (1933) presents 13 vowel sounds; Kiggins (1948): only 7; Puɔc (1994): 17; Yigezu (1995): 13; Huffman (1997): 16; Hutchinson (1996): 16. Yigezu (1995) is a detailed study dedicated solely to the purpose of identifying the vowel phonemes. There are some significant divergences between what he describes and what I have observed, (for example, Yigezu claims that the /u/ is always non-breathy where I have found just the opposite) and dialect variation may explain some of the differences between my phonemicization and his. My consultant hails from Nasir in the Eastern Jikany, not geographically distant from western Ethiopia, the dialect Yigezu describes.

There is normally claimed to be contrastive tone in Nuer, (Crazzolara 1933, Kiggins 1948, Пуџс 1994, Yigezu 1995, Hutchinson (1996)), though only Crazzolara (1933) and Yigezu (1995) mark it in the orthography. I have not found compelling evidence for systematic phonemic tone in my research. In all the words I collected, no pair seems distinguished by tone alone. Tone seems to be the primary acoustic correlate that allows me to distinguish some words like *mal*, 'peace.nom' and *maal*, 'peace.gen', although there does seem to some length difference as well. The difference between such words is described by my consultant as being length.

### 2.2.3 The Orthography

The orthography used throughout has been provided by my consultant. I have adopted his spelling because it is apparently phonemic and consistent, and because it is difficult for me to hear many of the distinctions myself.

One potential pitfall of using an orthography in a morphological analysis is the presence of dialect differences. The orthography of my consultant could be different from his actual personal phonemic representation. This by itself would not be problematic – the material presented in this paper would be correct for a dialect of

Nuer, if not the one that it purported to be. Such an objection would be at odds with the observation that several times during our elicitation, my consultant gave two spellings of a word – “this is how they spell it in the West and this is how we say it”. One such case was the word for ‘water’, *pīi* vs. *pīw*. A more complex problem would be if my consultant tapped into his own phonemicization to “fill in the gaps” where he didn’t know the conventionalized spelling. Although I can’t categorically rule this out, I have not noticed anything of this sort during either my elicitation or subsequent analysis.

Another argument for using my speaker’s orthography is that it matches the most recently proposed orthographies pretty closely (Yigezu 1995, Hutchinson 1996, Huffman 1997). As close as his orthography is to these other works, it is not exactly like either of them, (for example, my consultant uses /ɣ/ where Yigezu uses /h/. Furthermore, my consultant symbolizes vowels differently, lacking Yigezu’s /ä/ and Hutchinson’s /ɛ/ but including /ë/, which Hutchinson and Yigezu lack. My consultant’s consonant orthography is identical to Huffman’s, but the vowel orthography is completely different, which implies that if he learned his spelling by rote, he did not learn it from one of these sources.



The final reason that I believe that the phonemicization is approximately phonemic is that on a few occasions, I wrote down a form which was confirmed by my consultant. When I drew his attention to something I had not heard clearly, such as length, I would ask (e.g.), "Should there be two /a/s?". Sometimes he would say, "No, there should only be one /a/". Other times he would say, "yes, maybe you should spell it with two /a/s". This suggests to me that he is tapping his own phonemic knowledge rather than using a conventionalized orthography.

### **2.3 The Syntax of Case and Number in Nuer**

The morphological forms which a Nuer noun may take are the nominative singular, nominative plural, genitive singular, genitive plural, locative singular and locative plural. Several examples are provided in Table 3.

**Table 3**  
**Examples of Nuer Nouns**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
back	jok	j <sub>i</sub> ok	jok	j <sub>i</sub> okn <sub>i</sub>	jok	j <sub>i</sub> okn <sub>i</sub>
bee	tuaar	tuar	tuar	tuar <sub>i</sub>	tuar	tuar <sub>i</sub>
blood	riem	rim	riem	rimn <sub>i</sub>	riëm	rimn <sub>i</sub>
buttock	tat	tät	taatkä	taatn <sub>i</sub>	taatkä	ta <sub>a</sub> atn <sub>i</sub>
cane	roany	rony	roanykä	ronyn <sub>i</sub>	roanykä	roony
oxbow lake	lil	lil <sub>i</sub>	lilkä	lil <sub>i</sub>	liel	lil <sub>i</sub>
pond	löl	löl <sub>i</sub>	löölkä	löl <sub>i</sub>	löölkä	löl <sub>i</sub>
rat	kun	ku <sub>o</sub> n	k <sub>o</sub> n	ku <sub>o</sub> n <sub>i</sub>	k <sub>o</sub> n	ku <sub>o</sub> n <sub>i</sub>
river	yieer	yiër	yieer	yiëri	yieer	yiëri

Most Nuer words have a form for each of these six case/number combinations. Often, several of the forms are identical; for example in the word, *jok* 'back' in Table 3, the same form is found for nominative, genitive and locative singular. Some Nuer words, unlike those in Table 3, do not have both singular and plural forms; some of these are listed in Table 4. There may equally be forms which cannot be genitive or locative, though none were discovered in the current project.

**Table 4**  
**Nouns Lacking Singular or Plural Forms**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
bad blood	nueer	nfp	nueerkä	nfp	nueerkä	nfp
flour (wheat)	bapro	nfp	baprokä	nfp	baprokä	nfp
end of milking	bëël	nfp	bëël	nfp	bëël	nfp
grunt	kuom	nfp	kuomkä	nfp	kuomkä	nfp
life	tek	nfp	tek	nfp	tekä	nfp
coll. of things	nfs	ŋoak	nfs	ŋoakni	nfs	ŋoakni
money	nfs	kääŋ	nfs	kääŋni	nfs	kääŋni
water	nfs	piw	nfs	pieni	nfs	pieni

The abbreviations *nfp* and *nfs* stand for “no form-plural” and “no form singular” respectively in Table 4.

### 2.3.1 The Syntax of Nominative

Nominative case in Nuer appears in unmarked contexts: that is, in isolation, in subject position, object position, and some oblique positions (i.e. the object of some prepositions). Examples of this are given below.

#### *Nominative Subject*

- (2) dhool            diɔk ci kɛ we may  
       boy.nom.pl three aux pl go fish  
       *Three boys went fishing.*

#### *Nominative Object*

- (3) cä                    buokni            diɔk kɔk  
       aux.1sg.past book.nom.pl three buy  
       *I bought three books.*

#### *Nominative Oblique*

- (4) cɛ ney            duec kɛ kɛɛt  
       aux 1.pl.excl. hit prep stick.nom.sg  
       *he hit us (excl.) with a stick.*

### 2.3.2 The Syntax of Genitive

The genitive construction in Nuer consists of the juxtaposition of the *possessed* and *possessor* in that order. The possessor appears in the genitive case and the possessed appears in whichever case a simple noun would otherwise appear. In (5), the possessed appears in the nominative because a simple noun in isolation appears in the nominative.

- (5) *biɛl*                *tuaar*  
       color.nom.sg bee.gen.sg  
       *the color of the bee*

There is, apparently, a genitive case form for every noun in the language. As in English, the possessor, the possessed, both or neither may be singular or plural. Thus, *biɛl tuaar* (the color of the bee), *biɛl tuar* (the colors of the bees), *biɛl tuaar* (the colors of the bee) and *biɛl tuar* (the color of the bees) are all grammatical noun phrases.

### 2.3.3 The Syntax of Locative

The locative form of Nuer nouns may appear following a locative preposition or directly after the verb. Even when the preposition is absent, the meaning of *near X*, *by X*, *to X* or *at X* is preserved.

- (6) nyiɛc tee            thiekä dueel  
       bug    stay(is) near    house.loc.sg  
       *The bug is near the house.*

When the locative item is possessed, a particle *dä* appears after the possessed word, as in (7).

- (7) nyiɛc tee thiekä taatkä                    dä  
       bug    is    near    buttock.loc.sg    my  
       *The bug is near my buttock.*

#### 2.3.4        The Syntax of Number

The form for singular and plural may be distinct for each of the cases. A plural use of a noun may syntactically prompt the use of the plural agreement morpheme /kɛ/. Semantically, the Nuer plural seems, for all intents and purposes, to be the same as in English although many mass nouns occur only in the plural in Nuer, as illustrated in Table 4 above.

### 3        Describing Nuer Number and Case Morphology

As mentioned earlier, Nuer nouns are remarkable for their extremely high rate of irregularity. A distinction should be made between the one productive morphological process which can be used to derive any of the six forms (nominative singular, nominative plural, genitive singular, genitive plural, locative singular and locative plural) and the majority of the data, which must be considered irregular and unpredictable. The productive processes all involve suffixation: the non-productive processes occasionally

involve suffixation, but when they do, they contain some sort of stem change as well. Before proceeding, however, a note on my usage of certain terms is in order. In this paper, frequent references will be made to *irregularity* and *productivity*. I use *irregular* to describe those words in the language for which the output of the morphology (the surface phoneme string) is not predictable given the underlying form and the morphological rules. When the derivation is set up in the most inclusive and precise way, the level of *irregularity* which we must admit is the lowest. I use the word *productivity* in nearly the same way as Bochner (1992).

"The usage I propose is that morphology is productive when it can produce new words. That is, I will refer to an affix (or a morphological construction as compounding) as productive if there is some open class of cases where it can be used freely, subject only to general conditions, to create words that are readily accepted by speakers who haven't heard them before."

### **3.1 Productive Morphology**

There is a fundamental division that can be made in Nuer between productive and non-productive (or irregular) morphology. For each of the six grammatical forms of nouns in Nuer, there is one process which enjoys a privileged status above the others. It is the most frequent process (accounting for between 23% of the data (nominative plurals) to 81% of the data (locative plurals)); it is used to produce new forms; and it is more likely to be applied to

compound and borrowed words. In this section, these productive processes (the only processes to which I apply the term "rule") are described.

### 3.1.1 The Regular Rules

The regular rules all involve suffixation. A paradigm for two of the twenty-two Nuer nouns which follow all the regular rules is provided in Table 5.

**Table 5**  
**Examples of Completely Regular Noun Morphology**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
banana	bɛle	bɛlenɿ	bɛlekä	bɛlenɿ	bɛlekä	bɛlenɿ
splash (anim)	ɡuaŋ	ɡuaŋnɿ	ɡuaŋkä	ɡuaŋnɿ	ɡuaŋkä	ɡuaŋnɿ

Based only on the regular data, we can hypothesize that the nominative singular form is also the stem from which the other forms may be derived. The nominative plural, genitive plural and locative plural are formed by suffixing /nɿ/ to the stem. The genitive singular and locative singular are formed by suffixing /kä/ to the stem.

There is one rule of allomorphy useful to mention at this point which regards /nɿ/ suffixation. As can be seen in Table 6, when the stem ends in /l/ or /r/, the /n/ of the suffix does not appear.

**Table 6**  
**/nɪ/ Allomorphy Following Liquids and Glides**

English	Nom Sg	Nom Pl
umbilical cord	cɑ̃r	cɑ̃rɪ
elbow	cɪl	cɪlɪ

These regular rules account for 23% of the nominative plural data, 37% of the genitive singular data, about 23% of genitive plural data, 33% of locative singular, and just more than 22% of locative plural data. The words which were regular for one form were not consistently the same words which were regular for another form. For example, of the 204 words which were regular for the locative singular data, only 166 also had a regular locative plural form – and these are the two most regular classes of the six. In fact, of the 252 nouns for which all six forms were collected, only 22 (less than 10%) are completely regular for all six forms.

### 3.1.2 Nonce Forms

In an effort to understand the distribution of singular and plural forms, I decided to employ a modified version of the Berko (1958) “wug” test. In her experiment, she presented schoolchildren with possible but unattested English words and elicited new morphological forms of them through a fill-in-the-blank exercise using syntactic contexts that prompted the desired form. Following this methodology, I invented a number of words which fit the phonotactic constraints of



Nuer as I understand them, and asked my consultant if these words were already Nuer words. If they were not, I asked if they could be. Of course, many were existing Nuer words, and this proved to be an interesting method of eliciting data. Using the same methods employed to obtain the five other forms of real words, I elicited the forms in Table 7.

**Table 7**  
**Nonce Data**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
*wug*	wug	wuug/ wugni	wugkä	wugni	wugkä	wugni
*wug2*	piudh	piudhni	piudhkä	piudhni	piudhkä	piudhni
*wug3*	bööŋ	bööŋni	bööŋkä	bööŋni	bööŋkä	bööŋni
*wug4*	bɔiir	bɔiiri	bɔiirkä	bɔiiri	bɔiirkä	bɔiiri
*wug5*	cuiir	cuiiri	cuiirkä	cuiiri	cuiirkä	cuiiri
*wug6*	rɔäk	rɔäknɪ	rɔäkä	rɔäknɪ	rɔäkä	rɔäknɪ
*wug7*	rop	ropni	ropkä	ropni	ropkä	ropni

I am uncertain why the first wug elicited both the stem lengthening form (to be discussed in section 3.2.1.2.1 below) and the /ni/ affixation form (possibly confusion at the unnaturalness of the task) but after this initial deviation, the only process used was the /ni/ suffixation process, complete with /i/ allomorphy after the liquids /r/ and /l/.

Next, departing from Berko (1958) I asked if the forms in Table 8 would also be acceptable plurals for *rop*, “\*wug7\*”.

My consultant stated that all the plural forms I suggested could as easily be the plural form.

**Table 8**  
**Nonce Forms – Alternative Nominative Plurals**

English	Nom Sg	Nom Pl
*wug7*	r <u>o</u> p	r <u>o</u> p <u>n</u> i
*wug7*'	r <u>o</u> p	r <u>o</u> <u>o</u> p
*wug7*''	r <u>o</u> p	r <u>o</u> <u>a</u> p
*wug7*'''	r <u>o</u> p	r <u>o</u> p <u>n</u> i
*wug7*''''	r <u>o</u> p	r <u>o</u> p
*wug7*''''''	r <u>o</u> p	r <u>o</u> p

The first part of this experiment seems to indicate that the rules stated in section 3.1.1 are used for novel forms in the language and the second part of this experiment suggests the same rules do not constrain the range of forms judged possible. It is because of the results obtained in the first part of the experiment, even more than the fact that these rules have a higher frequency in the data than other processes, that I call these rules productive. The second part of the test, where my consultant reported that any of the six nominative plural forms I invented were acceptable, shows that there is a high tolerance in the language for a variety of irregular stem changes. Note that in English, given the singular form *wug*, *wugs* is acceptable, but *wig*, *wags* etc. are intuitively not even possible.

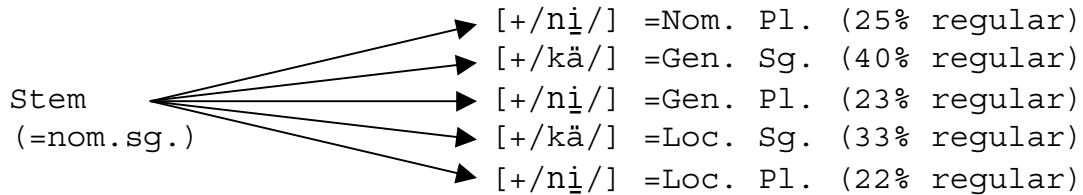
### 3.2 Irregular Morphology

The great majority of Nuer nouns (about 90%, or 230 of 252) are irregular in at least one of their six forms. Irregularity takes the form of some type of change in the noun stem, usually in the stem vowel. This section will seek to describe the nature of this irregularity by isolating the different properties of the noun stem which are subject to variability, the frequency of each of these irregular processes and the patterns which emerge between classes of forms and within them.

In the sections which follow, certain assumptions will be made regarding the relationship between the various forms, specifically, which form(s) should be considered the "base" and which would be best viewed as "derivatives". This is intimately related to the decision of how many *principal parts* does it make sense to assume. It should be noted up front that there is a some degree of arbitrariness in the choices made here, though where motivation for one order of derivation or another is present, it is exploited.

In section 3.1.1, I proposed a derivation that yields the correct forms for regular data. This is reproduced in Figure 2.

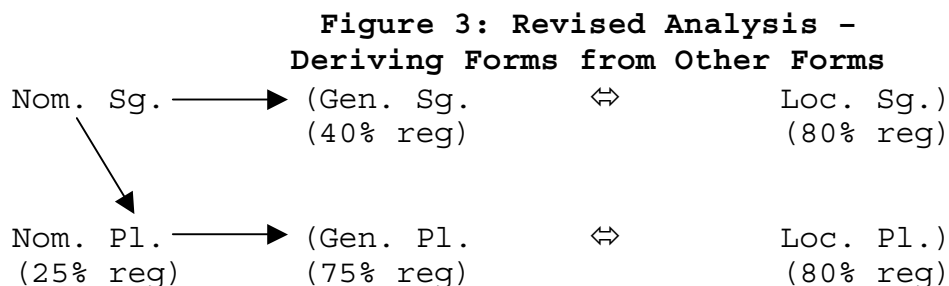
**Figure 2: Analysis Deriving All Forms  
from Nominative Singular Stem**



Only one form is stored in the lexicon for regular nouns, so we could think of this as being a one-principal-part analysis. This model works well for regular forms, but irregular morphology suggests that there may be a better way to describe the data. In irregular forms, singular stems overwhelmingly resemble other singular stems, regardless of case. Likewise, plural stems overwhelmingly resemble other plural stems. Thus, it would make sense to derive genitive and locative plurals from the nominative plural form rather than from the nominative singular form. Furthermore, genitives and locatives are usually identical (80% of the time). If we assume one of these to be derived from the other (for example, to assume that locatives are derived from genitives), we can say that one of these classes is regular 80% of the time. If instead we derive everything from the nominative singular, genitives and locatives are quite irregular as can be seen in Figure 2 above. In order to capture these correspondences among singular and plural irregular stems, and between genitive and locative stems, we must posit sub-regularities. Otherwise, there would be no

way to explain the fact that, for example, genitives and locatives tend to be derived irregularly from the stem in exactly the same way.

If, however, forms are derived from existing forms instead of from an underlying stem, these correspondences fall out naturally. This still posits only one principal part, but the derivation is mostly serial (rather than parallel as in Figure 2). The path of derivation that I follow is shown in Figure 3.



The double headed arrow between genitives and locatives in Figure 3 represents the fact that the decision to derive one from the other or vice-versa is arbitrary (since they are usually the same). In this thesis, I have chosen to derive locatives from genitives, but there was no interesting reason for me to have done so. In this thesis, I will follow the paths of derivation outlined in Figure 3. The rules which I will treat as regular throughout the remainder of this thesis have been modified as in (8).

(8)

Previous Analysis

Stem = Nom. Sg.

Stem + /nĭ/ = Nom. Pl.

Stem + /kă/ = Gen. Sg.

Stem + /nĭ/ = Gen. Pl.

Stem + /kă/ = Loc. Sg.

Stem + /nĭ/ = Loc. Pl.

Revised Analysis

Stem = Nom. Sg.

Nom. Sg. + /nĭ/ = Nom. Pl.

Nom. Sg. + /kă/ = Gen. Sg.

Nom. Pl. + /nĭ/\* = Gen. Pl.

Gen. Sg. = Loc. Sg.

Gen. Pl. = Loc. Pl.

\*if Nom. Pl. doesn't already  
end in /nĭ/.

One final piece of evidence that forms are derived from each other rather than from a common stem is that there are some nouns which have plural forms but not singular forms. For these words, there would be no singular form to derive the plural from. Here, we would have to say that there is an underlying representation that is not equivalent to the non-occurring nominative singular.

This invokes the possibility that there are two forms (or principal parts) stored for all nouns, a singular and a plural stem from which all forms are derived. This would account nicely for the fact that words occasionally lack singular forms or lack plural forms, but never lack nominative, genitive or locative forms. If a stem is absent, then it is not available to derive other forms, but the only stems are singular and plural, so gaps are only found across singular forms or across plural forms. Note that this possibility is essentially equivalent to Figure 2, minus the arrow connecting Nominative Singular and Nominative Plural.

The last possibility I will consider is a three-principal-part analysis. The preferred form to add to our list of principal parts would be the one whose derivation is involved in the next highest level of irregularity: genitive singular (having next lowest regularity percentage in Figure 3). Because there are no attested words that lack only genitive singular and locative singular forms, such an analysis would miss the generalization concerning lexical gaps stated above. However, if we assume the only derived forms to be genitive plural, locative singular and locative plural, no remaining derivation has a rate of irregularity higher than about 25%. Under such an analysis, one could predict all six of the forms for 128 nouns (49%), as opposed to the 22 (8%) completely regular nouns under the one principal part analysis.

In this thesis, I only assume one principal part because I want to account for the relationships between nominative singulars, nominative plurals and genitive singulars. This analysis is essentially equivalent to one assuming principal parts; a principal part analysis would express what I call the derivation of nominative plural and genitive singular as patterns or correlations that hold between principal parts.

### 3.2.1 Irregular Nominative Plural Morphology

In Table 9 below, there is a sample of some nominative singular and plural forms.

**Table 9**  
**Select Nominative Singulars and Plurals**

English	Nom Sg	Nom Pl	Changes
fire/gun	mac	măc	breathiness added <sup>2</sup>
breast	th <sub>i</sub> n	thin	breathiness removed
moon	pay	păth	consonant change (#10), breathiness added
girl	nyal	ny <sub>i</sub> är	diphthongization (#18), breathiness added, consonant change (#8)
leg	c <sub>i</sub> ök	cok	monophthongization (#1), breathiness removed
spoon	tuŋ	tu <sub>o</sub> ŋ	diphthongization (#13)
snail	c <sub>o</sub> m	c <sub>i</sub> öm	diphthongization (#24), place change (#31)
back	jok	j <sub>i</sub> ök	place change (#24), diphthongization (#24)
chair	k <sub>o</sub> m	koamni <sub>i</sub>	diphthongization (#8), /ni/ suffixation
egret	böön	bo <sub>o</sub> ŋni <sub>i</sub>	place change (#28), /ni/ suffixation
lung	puäth	pu <sub>o</sub> th	place change (#16)
leader	kuär	kuär	place change (#18)
goat <sup>2</sup>	dɛl	det	consonant change (#7), place change (#2)
bump (bruise)	p <sub>o</sub> ny	po <sub>o</sub> ny	lengthening
child	gat	gaat	lengthening
leopard	th <sub>o</sub> än	th <sub>o</sub> on	monophthongization (#2), lengthening
dung	wäär	wer	shortening, place change (#13).
village	wec	wi <sub>i</sub> ɣ	place change (#5), consonant change (#9), lengthening

<sup>2</sup> These processes will be explained in detail in section 3.2.1 below.

<sup>3</sup> The number in translations like "goat2" indicates this form is the second possible Nuer translation was available for the English word "goat".



How can we make sense of this wide variety of different stem changes? Some of them involve a change in the vowel nucleus (for example, *mac/mäc*, 'gun(s)' and *gat/gaat*, 'child/children'). Other changes involve a change in the coda consonant (for example, *wec/wijɣ*, 'village(s)'). One uniformity within the data is that onsets never change. Still others contain the regular suffix in addition to some irregular change in the stem (for example, *kɔm/kɔamni*, 'chair(s)'). I have assembled an inventory of nine major processes which can capture the variation found in the chart above. Note that these processes are intended to be primitives which can be viewed as individual processes or steps in a derivation of the plural from the singular. These processes will serve as the primitives for describing the derivations of locatives and genitives as well.

### 3.2.1.1            /nɪ/ Suffixation (nɪ)            C(V)VC → C(V)VCnɪ

**Table 10**  
**/nɪ/ Suffixation Examples (irregular)**

English	Nom Sg	Nom Pl
cup2	liɛr	liäɾɪ
pot	dhaar	dhäɾɪ
chair	kom	koamɪ
hunter/bow	bär	baɾɪ
front of body	bap	baapɪ
ocean	bäbdit	bäbdiiɪtɪ
door	thiik	thikɪ

Besides being the regular rule for deriving nominative plurals (section 3.1.1 above), /nɪ/ suffixation may occur in forms which also contain stem changes. /nɪ/ suffixation is present in 87 of 263 (33%) of Nuer nominative plural words (61 words in which the only difference between nominative singular and plural is the /nɪ/ suffix, and 26 more which bear the /nɪ/ suffix and some other stem change).

### 3.2.1.2            Stem Vowel Lengthening and Shortening

#### 3.2.1.2.1           Stem Vowel Lengthening (sl)

$$C(V)VC \rightarrow C(V)V:C$$

This process lengthens the stem vowel to form the plural. A sample of examples are provided in Table 11. In some of these words lengthening is the only process at work (the first two), and in the rest, there are other changes in the stem as well.

**Table 11**  
**Lengthening Examples**

English	Nom Sg	Nom Pl
animal	ley	leey
arm (upper)	wuɔ̃k	wuɔ̃ɔ̃k
bone	coɣ	cɔ̃ɔ̃ɣ
medicine	wäl	waal
leopard	thoän	thɔ̃ɔ̃n
tongue	lep	lëëp
gourd	guey	gueet

Lengthening is involved in the derivation of 84 of 263 (about 30%) of the nominative plural forms collected.

#### 3.2.1.2.2 Stem Vowel Shortening (sl-)

$$C(V)V:C \rightarrow C(V)VC$$

The opposite of the process above, sl- takes a stem with a long vowel and derives a plural with a short vowel. Examples are provided in Table 12 where the shortening can be seen in isolation (the first example) and in combination with other changes.

**Table 12**  
**Shortening Examples**

English	Nom Sg	Nom Pl
vulture	k <sub>aa</sub> t	k <sub>a</sub> t
tortoise	kuëët	kuet
river	yieer	yiër
yawn	ŋaam	ŋäm
bark2	guää	guäth
scorpion	jiith	jieth
September	laath	lëthn <sub>i</sub>
thorn	kuoock	kuiy

As shown in *lëthn<sub>i</sub>* 'September', in Table 12, even when the regular suffix /n<sub>i</sub>/ is applied, the form is considered irregular if there is some stem change accompanying the otherwise regular suffix. Shortening is involved in the derivation of 24 of 263 (about 10%) of the nominative plural words collected.

#### 3.2.1.3 Change in Place of Stem Vowel (p1)

$$C(V_1)V_2C \rightarrow C(V_3)V_2C \quad \text{or} \quad C(V_1)V_2C \rightarrow C(V_1)V_3C$$

This process changes the place of a vowel in the singular form. In fact this process is a cover term for 90 different possible changes in vowel place that can occur (of which 32 are attested). Some examples are provided in Table 13.

**Table 13**  
**Place Change Examples**

English	Nom Sg	Nom Pl
slap	pät	pät
lung	puäth	puoth
hyena	yak	yaak
dish	tuok	tuok
hippo	row	rööth
river	yieer	yiër
house	duel	duël

A breakdown of the various vowel change rules has been illustrated in Table 14.

**Table 14**  
**Attested and Possible Place Changes**

		Resulting Vowel															
Original Vowel		i	ī	ε	ē	e	ë	a	ä	ā	o	u	ö	u	u	u	u
	i																
	ī																
	ε	1				2	3	4	4								
	ē	1				2		4									
	e		5	6		7		8	8								
	ë					9		10	10								
	a			12	12	13	14			15							
	ä		11	12		13				15	16						
	ā					17		18	18								
	o	19	19	20				21		22			23	23	24	25	
	u							21	22							25	
	ö										27	27			28		26
	u							29		30	30		31				

This chart is to be read "the vowel in the left column changes to the place of the vowel in the first row". Thus, place change number 32 should be read, "u changes to the place of ɔ". Change in place captures changes in features such as [high/low], [front/back], etc. The fact that breathy and non-breathy vowels often share the same place of articulation is captured by the grouping of such vowels together in the same boxes and the identity of their numbering. Shaded boxes are ones where the specified change in vowel would not change its place ([i] and [ɪ], for example, differ in breathiness, but not in place). The number of white boxes can be read to be the number of possible place changes and the boxes with numbers in them can be read as the attested place changes. It is interesting that the attested changes cluster around shaded boxes—otherwise stated, slight place changes are more likely to be attested than dramatic ones. I attach no particular meaning to this trend other than to point it out. Place change occurs in 61 of 263 (between 20% and 25%) of the nominative plural forms collected.

### 3.2.1.4 Diphthongization and Monophthongization

#### 3.2.1.4.1 Diphthongization (di)

$$\text{CVC} \rightarrow \text{CVVC}, \quad V_1 \neq V_2$$

The diphthongization process changes the stem of the singular into a diphthong in the plural.

**Table 15**  
**Diphthongization Examples**

English	Nom Sg	Nom Pl
spoon	tuŋ	tuɔŋ
cup	cuk	cuɔk
necklace	tiik	tiɛk
sea	kiir	kiɛr
monkey	gɔok	gɔakni
nonsense <sup>3</sup>	dhok	dhɔäk
lion	lony	luony

Like the place change process discussed above, diphthongization is actually a cover term for a wide variety of actual realizations (132 possible realizations, 24 attested ones). There are two ways of making a simple vowel stem into a diphthong: a vowel may be inserted after the stem vowel or before it. I am not claiming that the process is actually vowel epenthesis; I am just describing the process in this manner in order to make precise the number of possible and attested realizations of a diphthongization process. This is illustrated in tables 16 and 17.

**Table 16**  
**Attested and Possible Diphthongizations With Inserted Vowel**  
**Following Existing Vowel**

		Inserted Vowel (V <sub>2</sub> )													
		i	<u>i</u>	ɛ	ẽ	e	ẽ	a	ä	<u>a</u>	ɔ	<u>ɔ</u>	o	ö	<u>o</u>
Existing Vowel (V <sub>1</sub> )	i			1	2			3	4						
	<u>i</u>					5			6	7					
	ɔ							8	9						
	<u>ɔ</u>							10	11						
	u									12	13	14			

This chart should be read, "take the stem vowel in the left column and insert the vowel from the first row *after* it." Thus, diphthongization process #3 should be read, "take the stem vowel /i/ and insert an /a/ after it" to yield /ia/.

The other way to make a diphthong out of a monophthong is to add a vowel before it. These processes are shown in Table 17.



**Table 17**  
**Attested and Possible Diphthongizations With Inserted Vowel**  
**Preceding Existing Vowel**

		Inserted Vowel (V <sub>1</sub> )				
		i	<u>i</u>	ɔ	ɔ̹	u
Existing Vowel (V <sub>2</sub> )	i					
	<u>i</u>					
	ɛ					
	ë					
	e					
	ë					
	a	15	16	17		
	ä		18			
	a					19
	ɔ					20
	ɔ̹					
	o	21				22
	ö		23			
	o̹		24			
	u					

This chart should be read, "take the stem vowel in the left column, and insert the vowel from the first row *before* it. Thus, diphthongization process #15 should be read, "take the stem vowel /a/ and insert /i/ before it" to yield /ia/. Like the chart mapping place changes in 4.1.3 above, the shaded boxes would yield sequences of the same vowel, which would be analyzed as lengthening processes instead of diphthongization processes. The white boxes are possible diphthongizations, and the boxes containing numbers are attested diphthongizations. Diphthongization is present in

30 of 263 (about 10%) of the nominative plural forms collected.

#### 3.2.1.4.2 Monophthongization (dim)

$$CVVC \rightarrow CVC \quad V_1 \neq V_2$$

This process does the opposite of the diphthongization process described above. This transformation involves deleting one of the vowels of a diphthong found in the singular. There are only two possible manifestations (both of which are attested) of the monophthongization process in monosyllabic words: by eliminating the first vowel or by eliminating the second vowel in the stem. Examples are provided in Table 18.

**Table 18**  
**Monophthongization Examples**

English	Nom Sg	Nom Pl
leg	c <sub>i</sub> ök	cök
blood	riɛm	rim
leopard	thoän	thoön
ant	ɲiɛc	ɲiic

Thus, *cök*, 'leg.nom.sg' has undergone monophthongization process #1 (first vowel is deleted) but *rim*, 'blood.nom.pl' has undergone monophthongization process #2 (second vowel is deleted). The word in Table 19 can be viewed as having undergone monophthongization and diphthongization.

**Table 19**  
**Diphthongization and Monophthongization Example**

English	Nom Sg	Nom Pl
wind	jɪ̯ɔ̯m	joam

This is the only form to my knowledge which can be classified as having undergone both diphthongization and monophthongization.

### 3.2.1.5 Change in breathiness

#### 3.2.1.5.1 Breathiness Added

CV[-breathy]C → CV[+breathy]C

This process makes the vowel of the stem breathy. Examples are provided below.

**Table 20**  
**Breathiness Added Examples**

English	Nom Sg	Nom Pl
eye	waŋ	wãŋ
fire/gun	mac	mãc
leg	cɪ̯ök	cok
shoulder	jiar	jiër
milk	cak	cãk
chest	kaw	kãath
bear	lɛt	leet
flag	bɛɛr	bëri

Addition of breathiness to the stem vowel occurs in 29/263 (about 10%) of the nominative data collected.

### 3.2.1.5.2 Breathiness Removed (b-)

$$C(V)V[+\text{breathy}]C \rightarrow C(V)V[-\text{breathy}]C$$

This process changes a breathy stem form into a non-breathy plural form. Examples are provided below.

**Table 21**  
**Breathiness Removed Examples**

English	Nom Sg	Nom Pl
breast	th <sub>h</sub> n	thin
food	ku <sub>h</sub> n	kuan
knot (in tree)	t <sub>h</sub> t	tət
boy	dh <sub>h</sub> l	dhool
girl	nyal	ny <sub>h</sub> är

"Breathiness removed" is involved in 10 of 263 (less than 5%) of the nominative plural data collected.

### 3.2.1.6 Consonant Change $C(V)VC_1 \rightarrow C(V)VC_2$

In this process, the final consonant in the stem is different in the plural. This category includes pairs where the consonant has been added, removed, or changed in any way. Some examples are shown below.

**Table 22**  
**Consonant Change Examples**

English	Nom Sg	Nom Pl
place/time	g <sub>o</sub> ä	g <sub>o</sub> äth
firstborn	kä <sub>ʔ</sub>	käy
moon	pay	päth
gourd	guey	gueet
tree <sub>15</sub>	jiath	jien
goat <sub>2</sub>	d <sub>ɛ</sub> l	det

This process, like place change and diphthongization, is a cover term for many (403 possible, 18 attested) individual processes. A predictive process must be explicit as to which consonant should change and what it should change to. The chart below shows the possible and attested consonant changes.

Table 23  
Attested and Possible Consonant Changes

	p	b	m	w	th	dh	nh	t	d	n	r	l	c	j	ny	y	k	g	ŋ	ɣ	ø	
p																						p
b	1																					b
m																						m
w					2																3	w
th									4											3	3	th
dh																						dh
nh																						nh
t										5										3	3	t
d																						d
n								19														n
r								6														r
l								7		8												l
c															18				9			c
j																						j
ny																						ny
y					10			11												12	3	y
k																					3	k
g																						g
ŋ																						ŋ
ɣ																14						ɣ
ø				17	15											16						ø
suf k																					13	
suf n																						
	p	b	m	w	th	dh	nh	t	d	n	r	l	c	j	ny	y	k	g	ŋ	ɣ	ø	

This chart should be read, "change the stem-final consonant in the left column to the consonant in the first row." The white boxes are possible changes, shaded boxes are impossible changes (or not changes) the boxes containing

numbers are attested changes. Thus, consonant change process number ten should be read, "change a stem-final /y/ to /th/". Sometimes the suffix consonant disappears. For example, the genitive singular of *cāār* 'umbilical.cord.nom.sg' is *cāārä*. The /ä/ appears to be from the regular suffix /kä/, except, the /k/ is missing. Such forms are described here as having undergone /kä/ suffixation and consonant change #13, which changes the suffix /k/ to /q/. One of the consonant change processes is involved in 20 of 263 (8%) nominative singular/plural pairs.

### 3.2.1.7 Suppletion

Suppletion is a quite minor occurrence in Nuer noun morphology. In the following three forms, there seems to be no correspondence between the singular and plural forms.

**Table 24**  
**Suppletive Nouns**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
person	raan	naath	ran	nath	ran	nath
woman	ciek	man	ciek	mään	ciek	mään
cow	yaŋ	ʏɔk	yaan	ʏɔɔk	yaan	ʏɔɔk

Notice that in all three instances, the suppletion is only between the nominative and plural forms. The genitives and locatives are clearly related to the nominative singular and plural forms. No instances of suppletion of genitives or

locatives were found in the data. This may be taken as a form of weak support for the view adopted in this paper that in locatives and genitives, singulars are derived from singulars and plurals from plurals.

### 3.2.1.8 Summary of the Major Processes

The processes described above can be used to account for all of the data of the nominative plural.<sup>4</sup> The same processes seem to be at work in the formation of the other cases as well as will be shown below. About 169 of 263 of the words (about 65%) can be adequately described using just one of the processes. The rest are better treated as undergoing more than one. Some examples are provided in Tables 25a-b.

**Table 25a**  
**Co-occurring Processes**

sl, b-, pl27

English	Nom Sg	Nom Pl
boy	dhöl	dhool

This word can be analyzed using sl (lengthening), b- (breathiness removed), and pl27 (place change process number 27 (/o/ to /ɔ/)).

**Table 25b**

b, di16, con8

English	Nom Sg	Nom Pl
girl	nyal	nyiär

---

<sup>4</sup> In my descriptions, I will be using abbreviations for these processes. /ni/ suffixation will be referred to simply by /ni/, stem vowel lengthening by sl, stem vowel shortening by sl-, change in place of stem vowel process #X by plX, Diphthongization process number X by diX, Monophthongization process #X by dimX, breathiness added by b, breathiness removed by b- and consonant change process #X by conX.



Some processes that I treat as a combination of processes could be interpreted as fitting one of the above simple processes already described if we treat long vowels as sequences of two identical vowels (Yigezu 1995) instead of as a singular long vowel.

**Table 26**  
**Consequence if Long Vowels are Sequences**

English	Nom Sg	Nom Pl
scorpion	jiith	jiɛth
sea	kiir	kiër

If long vowels are just sequences of identical short vowels, then the above two pairs can be treated as having undergone the “place change” process (there is no number for this place change because it is not otherwise attested). If not, then these vowels must be treated as having undergone both shortening (sl-) and diphthongization (di1 and di2 for *jiith* and *kiir* respectively). Given that these processes are simply devices intended to make description easier, and have no theoretical import of their own, there’s no advantage in manipulating our theory of long vowels to maximize economy in the number of processes said to participate in a given nominative singular/plural pair.

### 3.2.1.9 Other Analyses of Nominative Singular / Plural Data

How did previous students of Nuer describe the same data? Crazzolara (1933, p. 27), in his grammar, presents one other account, and he claims that "the formation of the plural from the singular as well as that of some particular cases from the nominative are dependent on uniform rules of sound changes, including changes in intonation." The relevant rules for the plural are much the same as the ones I have identified above.

- a) [pertains to genitive and locative cases]
- b) "The quantity of the stem vowel is changed, long becomes short or short becomes long."  
[This corresponds to my processes *sl*, and *sl-*. WJF]
- c) "The quality of the stem vowel is changed, open vowels become close, or close ones become open or diphthongized".  
[This encompasses my processes *b*, *b-*, *diX*, *dimX*, *plX*. WJF]
- d) "The terminal-consonant of the stem may be changed".  
[ $C_1V^*C_2 \rightarrow C_1V^*C_3$ , this is my *conX*. WJF]
- e) "A change of intonation may be effected."  
[For reasons noted in 2.2.1 above, I do not believe tone is a relevant distinction in Nuer nouns. WJF]

Crazzolara (1933, p. 28) and I agree about the basic derivation of plural forms. He says "the plural is formed in accordance to the above rules... Since more than one of these rules is usually employed for the formation of each plural, the beginner must be careful not to trust analogy without verification for each instance". Crazzolara does

not identify any one process as having privileged productive status among the others as I have.

Huffman (1997) also gives a similar account of Nuer singular/plural data in his dictionary (pg. 54-5).

"Formation of Plural

By adding suffix -ni to singular form.

miak	miakni	insect
------	--------	--------

...

Nouns ending in k may form the plural by adding the suffix -ni.

kak	kakni	field
-----	-------	-------

...

By adding suffix ɪ.

dhar	dharɪ	
------	-------	--

...

(The suffix ɪ seems to be used only with nouns ending in r or l as far as I have found examples.)

By change in intonation

luc/	luc\	cattle stake
------	------	--------------

...

By change of vowel

luak	luək	barn
------	------	------

...

By lengthening the vowel

gat	gaat	child
-----	------	-------

...

By substituting u for wo

kwoth	kuth	god
-------	------	-----

...

Nouns whose singular form ends in t, may drop the final t before adding the suffix -ni to form the plural.

mut	munɪ	spear
-----	------	-------

...

Some nouns form their plurals irregularly.

yaŋ	ʔok	cow
-----	-----	-----

..."

Not surprisingly, Huffman's description parallels this one closely with certain exceptions. Of the processes I've

outlined, he has listed, "change in place of vowel", "lengthening", monophthongization process 2 (though his statement of this process is much more restrictive than mine-only applying to /wɔ/ → /u/), and consonant change 3 (again, stated more restrictively, applying only to /t/ → q) and suppletion. Besides extending an analysis to words which Huffman ignores, the analysis here is more specific. Some of the discrepancies can be attributed to the differing phonemicizations we utilize. For example, no mention to breathiness is made in Huffman (1997) (although his /ɪ/ seems to correspond to /i/) so he cannot appeal to this feature in describing singular/plural differences. Unfortunately, we cannot know if Huffman's analysis was intended to be exhaustive – that is, did he intend the above listed processes to be able to account for all of the Nuer words he collected. Plural forms are only sporadically included in his nominal dictionary entries.

This morphological pattern of plural formation in Nuer, typologically unusual as it seems to be (I know of no other inflectional morphological system outside of Nilotic languages with a higher degree of irregularity), is perhaps not entirely alone in the languages of the world. Nuer's nearest genetic neighbor Dinka seems to display similar

behavior in its noun system, as described in Nebel (1948).  
Nebel says the following about Dinka singulars and plurals.

"Nouns change from singular into plural in many different ways:

- a) short vowels become long. E.g.: s. *pal* (knife), pl. *paal* (knives),
- b) long vowels become short. E.g.: s. *ciin* (hand), pl. *cin* (hands),
- c) many nouns change their vowel. E.g.:  
s. *baai* (village), pl. *bæi* (villages),  
s. *meth* (child), pl. *miith* (children),  
s. *nhom* (head), pl. *nhim* (heads),
- d) other nouns change their endings E.g.:  
s. *yic* (ear), pl. *yith* (ears);  
s. *rou* (hippo), pl. *roth* (hippos)"

These rules mirror roughly the account of Nuer elaborated here. It is relevant to note here that there is an interesting relationship between Dinka noun morphology and verb morphology as described in Anderson (1995). Anderson elaborates a complex system whereby, roughly speaking, various aspects of the verb such as deictics, benefactives, causatives, etc. are indicated on the verb by various combinations of segmental and supersegmental changes to the verb stem. Thus, morphology in Dinka nouns and verbs, though superficially similar, seem to be quite different: stem changes in Dinka nouns seem to be the manifestation of irregularity as in Nuer, but similar stem changes in the verbal morphology are motivated and meaningful. It would seem to raise important issues for language acquisition if the various combinations of stem form should be meaningful

in verbs and meaningless in nouns. Given the fact that Nuer verb morphology also superficially resembles its noun morphology, a closer examination of verb morphology may reveal it to be analogous to Dinka.

### 3.2.2 Irregular Genitive Singular Morphology

For reasons discussed in section 3.2 above (similarity in stem shape, etc.), I will describe the genitive singular noun forms of Nuer in terms of how they differ from their nominative singular counterparts. In addition to the productive morphology involving /kä/ suffixation, the processes proposed for nominative plural derivation are important, as can be seen in the sample of irregular genitive singular forms in Table 27.

**Table 27**  
**/kä/ in Genitive Singulars**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl
tongue	lɛp	lëëp	lëp	lëëpni
wind	jiɔm	joam	jiam	jiamni
moon	pay	päth	path	päthni
chest	kaw	kaath	kath	kaathni
bird	dit	diit	diɛt	diitni
dirt <sup>2</sup>	mun	mɔn	muɔn	mɔni
sound	jow	jiɔth	jiath	jiɔthni
needle	libɛ	libeni	lipɛkä	lipeni
millipede	kɔlkɔl	kɔlkɔli	kɔlkɔlä	kɔlkɔli
ash (dung)	puɔk	puuk	pukkä	puɔkni
boo-boo	buɔt	buɔɔt	butkä	buɔɔtni
back	jok	jiɔk	jok	jiɔkni
bear	lɛt	leet	lɛt	leetni

It should be noted that Table 27 is a sample of the variety of genitive singular derivation, not a representative sample. As with the nominative singular, /kä/ suffixation occurs in combination with other processes. One significant difference worth noting is that the genitive singular form is often identical to the nominative singular form as can be seen in words like *jok*, 'back.nom.sg / back.gen.sg' and *let*, 'bear.nom.sg / bear.gen.sg' in the table above. Otherwise, derivation of the genitive singular proceeds much as does the derivation of nominative plural, although the productive rule (suffixation of /kä/ to the nominative singular) accounts for a much greater percentage of the genitive singular data (almost 40%) than it does for the nominative plural data (23%), though this is not reflected in Table 27.

It is also worth pointing out that although the great majority of genitive singular nouns resemble their nominative singular counterparts more closely than the nominative plural forms, there exists a minority of forms whose stems more closely resemble the nominative plural than the nominative singular. Because of the difficulty in quantifying the number of forms which behave this way, I have made no attempt to do a detailed study of this phenomenon. Examples are given in Table 28.

**Table 28**  
**Ambiguity of Input in Genitive Singulars**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl
body	pu <u>o</u> ny	puäny	puäny	puänyn <u>i</u>
valley	täp	täp	täpkä	tääpn <u>i</u>
tamarind	koat	kot	kotkä	kotn <u>i</u>
desert	pan	paan	paan	paan <u>i</u>
bee	tuaar	tuar	tuar	tuar <u>i</u>

### 3.2.3 Irregular Genitive Plural Morphology

The genitive plural irregular forms are assumed to be derived from the nominative plural rather than from the nominative singular or genitive singular based upon a closer resemblance in their noun stems to former than to either of the latter, as was discussed in section 3.2 above. Not surprisingly, the same major processes needed to describe the stem change morphology previously (lengthening, shortening, change in place of the vowel, diphthongization, monophthongization, breathiness added, breathiness removed, and consonant change) will be useful when describing irregular genitive plurals. A sample of such words are given in Table 29.



**Table 29**  
**Genitive Plurals**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl
drum	bul	buol	bu <u>o</u> ol	bu <u>o</u> li
bark2	guää	guäth	gu <u>i</u> kä	gu <u>i</u> äni
cough	käk	kääk	käkkä	ka <u>a</u> kni
dog	jiök	jiöök	ji <u>o</u> k	ji <u>o</u> oni
tree15	jiath	jiεn	jiaath	jiεn
dish	tuok	tuok	tu <u>o</u> ok	tu <u>o</u> oni
goat2	dεl	det	d <u>ε</u> äl	d <u>ε</u> etni
valley	täp	tap	ta <u>p</u> kä	tä <u>a</u> pni
conflict	tεr	tεεr	tεr	tεεr
milk	cak	ca <u>k</u>	caak	ca <u>k</u>

As with the nominative plural, /ni/ suffixation occurs in combination with other processes. Identity with the nominative plural form is relatively common in these words, as can be seen in *tεεr*, "conflict.nom/gen.pl" and *cak*, "milk.nom/gen.pl" in Table 29. The productive rule accounts for a greater percentage of the genitive plural data (about 75%) than either the nominative plural (less than 25%) or the genitive singular (less than 40%). The regular rule is taken to be /ni/ suffixation to the nominative plural except where this would result in two consecutive /ni/ suffixes. This exception is useful because it allows us to treat the genitive plural formation of *all* the words in Table 30 as regular.

**Table 30**  
**Allomorphy in Genitive Plural /n<sub>i</sub>/ Suffixation**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl
tortoise	kuṣṣṭ	kuṣṭ	kuṣṣṭ	kuṣṭn <sub>i</sub>
tray	pṭ	pṭ	pṭkā	pṭn <sub>i</sub>
tree01	koar	koari	korkä	koari
tree02	kuel	kueli	kuelkä	kueli

Note that the genitive plurals above are predictable from the nominative plurals, but the nominative plurals are not predictable from the genitive plurals. That is, given only the genitive plural form, there is no way of knowing which nominative plurals will have the /n<sub>i</sub>/ suffix and which ones will not.

Although genitive plural stems overwhelmingly more closely resemble their nominative plural counterparts than their nominative singular counterparts, there is a minority of forms for which the reverse is true, some of which are listed in Table 31.

**Table 31**  
**Ambiguity of Input for Genitive Plurals**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl
knot (in tree)	tṭ	tṭ	tṭkā	tṭn <sub>i</sub>
shoulder	jiar	jiēr	jiar	jiari
nonsense3	dhok	dhoäk	dhokkä	dhokn <sub>i</sub>
narrows	mät	mṭ	mṭkā	mät <sub>i</sub>
slap	pät	pṭ	pṭkā	pät <sub>i</sub>
grass	juac	juaac	juackä	juacn <sub>i</sub>

To further confuse the picture, some genitive plurals more closely resemble genitive singulars than either of the nominative forms. Again, I draw no conclusions from this, but feel compelled to point it out nonetheless. The genitive plurals in Table 32, for example, follow the regular rule, except the stems are identical to the genitive singular rather than the nominative plural.

**Table 32**  
**More Ambiguity of Input for Genitive Plurals**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl
leader	ku <u>ṛ</u> ar	kuär	kuäär	kuäär <u>i</u>
pail	to <u>ṛ</u> k	to <u>ṛ</u> kni	tokto <u>k</u> kä	tokto <u>k</u> kni
elephant	guor	guur	gu <u>ṛ</u> ar	gu <u>ṛ</u> ari
wind	ji <u>ṛ</u> om	joam	ji <u>ṛ</u> am	ji <u>ṛ</u> amni
buttock	tat	tät	taatkä	taatni
door	thi <u>i</u> k	thi <u>i</u> kni	thi <u>ṛ</u> ak	thi <u>ṛ</u> akni

This may simply be due to the fact that given enough irregular stems, it is statistically likely that eventually an irregular stem will recur.

#### 3.2.4 Irregular Locative Singular Morphology

The locative singular forms in Nuer are the same as their genitive singular counterparts in the great majority of words, and since this is what I treat as the defining characteristic of regular locative singular forms, the locative singular morphology is overwhelmingly regular (about 80%). In section 3.2 I pointed out that there is no

motivation for claiming locative singulars to be derived from genitive singulars or vice versa. Had I chosen the other path and treated genitives as derived from locatives, this thesis would reach the same conclusions arrived at here because there does not seem to be any reason to treat either one as basic over the other. Not surprisingly, the approximately 20% of locative singular forms which are different from the genitive singular can be described using the same processes used in the sections above. Below is a sample of irregular forms.

**Table 33**  
**Locative Singulars**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
blood	riɛm	rim	riɛm	rimn̩i	riɛm	rimn̩i
oxbow lake	lil	lil̩i	lilkä	lil̩i	liɛl	lil̩i
eye	waŋ	wäŋ	waŋ	wääŋn̩i	waŋkä	wääŋn̩i
hair	nhim	nhiäm	nh̩im	nhiäm̩n̩i	nh̩imkä	nhiäm̩n̩i

All of the stems of the locative singular seem to resemble their genitive singular counterparts at least as naturally as any other form. This is also an appropriate juncture at which to note that there doesn't seem to be any real regularity in the types of irregularity found from one form to another. In the word *riɛm* 'blood.nom.sg', the plural is formed by monophthongization, the genitive singular is irregularly identical to the nominative singular, the genitive plural and locative plural are regular, and the

locative singular has undergone a change in vowel place. We will see in a later section that there is apparently no order or consistency to the manner in which forms become irregular, a fact which will make a declension class system unwieldy.

### 3.2.5 Irregular Locative Plural Morphology

The morphological behavior of locative plural forms in Nuer is analogous to that of locative singulars. They are overwhelmingly predictable from the genitive plural (again, about 80%, keeping in mind the same caveats stated in the discussion of locative singulars in section 3.2.4 above) and when not regular, they deviate in the same ways as the locative singular forms above. Some examples of irregular forms are provided below.

**Table 34**  
**Locative Plurals**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
cane	roany	rony	roanykä	ronyni	roanykä	roony
bag	gök	göök	gökkä	gökkä	gökkä	göökni
lion	lony	luony	lony	luonyni	lony	luony

In some forms, the stem of the locative plural form resembles the stem of some other form more than that of the genitive singular, from which it was presumably derived. I claim that this has no more importance than it did in cases above, and point out this fact for the sake of completeness.

**Table 35**  
**Ambiguity of Input for Locative Plurals**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
barn	luak	lueek	luaak	lueekni	luak	luaak
ash (dung)	puok	puuk	pukkä	puokni	pukkä	puukni
valley	täp	tap	tapkä	tääpni	tapkä	tapni

### 3.2.6 Other Analyses of Case Data

Crazzolara (1933) has relatively little to say about case data.

"b) The forms for *genitive*<sup>5</sup> singular and for genitive plural are distinct from the respective nominative. The *locative* oftentimes has a form of its own for the singular, but only exceptionally for the plural. In most cases for the singular however and regularly for the plural, the form of genitive is used also for locative. In some few instances the form for locative will be found to be identical with that of nominative.

c) The same inflective rules, which govern the plural formation, are also applied for the formation of the cases. Here again no distinct rules can be set down as for the actual application of the said rules." (page 29)

His generalizations are accurate, although there certainly seem to be generalizations that he has missed, such as the prevalence of /kä/ suffixation for the genitive and locative singulars and the prevalence of /ni/ suffixation for the genitive and locative plurals. He may have omitted such a statement because less of his data seem to contain such suffixes.

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<sup>5</sup> Italics preserved from the original.

Welmers (1973) had the following to say about Nuer noun morphology.

"Some years ago I had the opportunity to work for some time with data from Nuer, tape-recorded and transcribed, giving the various forms of a few hundred nouns. In addition to a singular-plural distinction, there were forms that appeared to function somewhat like case forms of Indo-European languages. In the singular, one form is used for subject and object, another in other constructions, and a third (in appropriate cases) as a vocative. In the plural, only forms corresponding to the first two of these were found. The forms - a great many of them of the structure CVC, in which V may be single, double, or a cluster - differed from each other in their vocalic nucleus, often in tone, and sometimes in final consonant. Attempting to classify the variations in form, on the basis of only two or three of the available five forms, resulted in recognizing at least seventy-five types, no one of them representing more than a handful of nouns. There appeared to be no reasonable hope of grouping numbers of these types together in any rational way." (pp. 239)

The description he gives of the morphology is consonant with the one I have given above.

Huffman (1997) says the following about case formation (p. 55-6).

"Nouns ending in k, add the suffix -A for the singular form and -ni for the plural when used as an object of a preposition.

The suffix -ni added to the singular form of the noun, is used to form all cases in the plural.

kak	kakA	ka(k)ni	field
...			

Nouns whose vowel is  $\varepsilon$  form these cases as object of a preposition by lengthening the  $\varepsilon$ .

dɛl            dɛɛl            sheep (singular)

...

Some nouns whose vowel is u, form these cases in the singular number by substituting wɔ for u, the plural cases being formed by adding the suffix -nɪ to the singular form of the noun.

rup            rwɔp            rupnɪ            forest

...

Many nouns may be governed by these rules but there are many, the rules governing which, I have not found."

This is the extent of his treatment of case, and seems to be a good, if incomplete, look at the problem.

Nebel (1948) also discusses case formation in his grammar of Dinka. It is the only treatment of Dinka case that I am aware of in the literature. He proposes three cases for Dinka, but instead of a *genitive* he describes an *accusative*, which he characterizes as being formed by lengthening or "accentuating" the stem vowel. He also adds a case for *terms of time* which only applies to a few words. His description of locative case is provided below.

a) Vowels change in the locative case as follows:

			<b>Nominative</b>	<b>Locative</b>
a	changes into	$\varepsilon$	<i>marial</i>	<i>marieɛl</i>
i	changes into	iɛ	<i>madiŋ</i>	<i>madiɛŋ</i>
e	changes into	ɛɛ	<i>malek</i>	<i>malɛɛk</i>
ɛ	changes into	e	<i>geu</i>	<i>geu</i>
o	changes into	ɔ	<i>gok</i>	<i>gok</i>



o	changes into	a	<i>madhol</i>	<i>madhal</i>
ou	changes into	au	<i>atokthou</i>	<i>atokthau</i>
u	changes into	uo	<i>apuk</i>	<i>apuok</i>
ui	changes into	uiɛ	<i>maluil</i>	<i>maluiɛl</i>

b) Other nouns lengthen their vowel in the locative case.

e.g.: *adhal* locative *adhaal*

c) Irregular locative cases..." (page 36)

This account appears to be relatively regular (predictive), although Nebel does not mention whether the list of irregular forms that follows the passage quoted above is exhaustive. Thus, it seems that the apparent similarities between Nuer and Dinka noun morphology are confined to the nominative plural.

### 3.2.7 The Failure of Declension Classes

A declension class account of the Nuer noun data is apparently impossible. Such an account would be favorable, for example, if words that formed their plurals in the same way also formed their other cases the same way as each other. Even if the number of ways that nominative plural is formed were quite high, a declension class morphology would be favorable if all the words using any given one of these rules also patterned together in the way they derived their genitive and locative forms. This, however, is not the case in Nuer. Looking at all of the different ways that nouns become plural in Nuer (/nɪ/ suffixation, lengthening,

shortening, 32 place change processes, 28 diphthongization processes, 2 monophthongization processes, breathiness added, breathiness removed, 16 consonant change processes, and each of the attested combinations of these processes) 99 declension classes would be needed to account for nominative plural data alone. If one reorganizes the data by genitive singular, one finds that 63 classes are necessary to account for these words. One can do this for genitive plural, locative singular and locative plural, and 39, 35 and 31 rules respectively will be needed to account for each of these processes alone. In order to find out how many declension classes would be necessary to account for all the data I have collected, we need to count the number of sequences of declension class numbers attested. That is, if a given noun is a member of nominative plural class 32, genitive singular class 21, genitive plural class 17, locative singular class 4 and locative plural class 31, (like *lil*, "oxbow lake.nom.sg") we will assign it to a different declension class from a noun whose forms were derived by nominative plural class 32, genitive singular class 21, genitive plural class 17, locative singular class 10 and locative plural class 31 (like *nyanyet*, "ring.nom.sg") because the locative singular derivation of each is different. We cannot say that a word is a member of this same declension class if even one of these constituent

classes differs. In this way, exactly 208 declension classes would be needed to account for the 263 Nuer words collected. That is, the average declension class membership size would be less than 1.3. The largest declension class under this analysis can account for only 22 words. This class is the one utilizing each of the productive rules, and the only class that I treat as completely regular. 189 of the declension classes would contain only one member.

The reason the number of classes is so high in Nuer is that the way a noun derives one form is completely unrelated to the manner in which it proceeds with the other four derivations. Declension classes are clearly the wrong way to model Nuer's noun morphology.

### **3.2.8 An Attempt at an Explanation**

In this section I will present what I believe to be the most useful way of modeling this morphology. It does not rely on any particular theory of morphology; I will leave it to the reader to consider how such linguistic behavior ought to be modeled in particular theories.

It seems clear that the only explanatory analysis of the irregular data above would be a diachronic one. Synchronically, it seems clear that all or the vast majority of the noun forms are memorized, not produced online.

As in most, perhaps all, open class morphological systems, there is a productive rule which is used to derive new forms and to supply forms which are unspecified in the lexicon (depending on the morphological theory to which one ascribes, regular forms may or may not have lexical specification). There is only evidence for a single productive rule for each case/number combination. Irregularity is possible in only certain constrained ways, the description of which has taken up a large portion of this thesis so far. The initial consonant in the word, for example, never seems to vary between the forms of any word.

Either the six forms of a word are derived linearly, as I have analyzed them, linearly in a different way from how I have analyzed them, or all forms may be derived from some underlying, but non-occurring root or roots. The input form undergoes zero or more rules or processes.

One analysis might assign a coefficient to each process described above (e.g. /n<sub>i</sub>/ suffixation, lengthening, etc.) which would stand for the process' likelihood of occurrence. For example, a process which is found in 50% of the data should be assigned a coefficient of 0.5, indicating that it is as likely as not to apply. Under this kind of analysis,

a given process is just as likely to apply regardless of the presence or absence of some other process(es). Unfortunately, this does not explain why some processes don't account for approximately the same percentage of data in the presence or absence of other processes. That is to say, if a process has a coefficient which tells how likely it is to apply, that process should account for the same percentage of words which undergo only that process as it does in words which undergo several of these processes. In Table 36 the proportions for the nominative plural formation processes in isolation and overall are listed. Processes which are cover terms for other processes (diphthongization, monophthongization, place change and consonant change) are grouped together for convenience - this should not affect the reliability of such a comparison because sets intersected are the same in both instances. It is clear that the correlations between the percentages in the left column and the percentages in the right column are imperfect for several of the processes in Table 36 below.

**Table 36**  
**Comparison of Rule Percentages in Isolation and Overall**

Proc.	In Isolation		Overall	
breathiness	4/155	3%	29/263	11%
breath removed	3/155	2%	10/263	4%
consonant change*	2/155	1%	19/263	7%
diphthongization*	12/155	8%	30/263	11%
monophthongization*	9/155	6%	22/263	8%
/n <sub>i</sub> / suffixation	61/155	39%	87/263	33%
place change*	16/155	10%	62/263	24%
lengthening	42/155	27%	85/263	32%
shortening	6/155	4%	24/263	9%
Totals	155/155			

\*cover term for several processes

It should be noted that if this thesis assumed principal parts, the above would describe the relationship between the nominative singular and nominative plural principal parts rather than the derivation of the one from the other.

#### **4 Relevance and Theoretical Interest of the Data**

##### **4.1 High Irregularity**

The morphological alternations of the noun in Nuer (especially of the nominative singular and plural) are of specific typological interest as they demonstrate a rate of irregularity that is highly unusual. I have shown that no singular process can be invoked to account for even a quarter of the data with regards to singular and plural. A surprising degree of irregularity is also to be found in the other cases and numbers.

We might also look for evidence regarding the sustainability of such high irregularity in a language. Common views of language would suggest that this high degree of irregularity should be an unnatural state for a language to find itself in. Under the view that language is basically an orderly system, irregular forms of lesser frequency soon become "regularized". If Nuer has had this level of irregularity for some time, it may be that languages can develop a sort of "tolerance" for high irregularity. This might be compared with phoneme inventory size. Maddieson (1984) showed that quite large and quite small phoneme inventories are attested and that there seems to be little or no pressure to reduce large inventories or enlarge small ones. In some sense, phoneme inventories have a certain "tolerance" for such traits and seem not to be subject to such linguistic criteria as economy (either of phonemes for large inventories or of word size for small inventories). It remains to be investigated whether large degrees of irregularity put any pressure on the language system, and if extremes in irregularity, like extremes in phonemic inventory size, are not the cognitive burden that we may have wanted to postulate for theoretical linguistic reasons. Preliminary indications are that this process has been relatively stable—the time depth of this state of the morphology presumably goes back to when Nuer and Dinka were

the same language given that Nebel (1948) reports a nearly identical nominative noun morphology in his grammar.

Another question concerning tolerance of irregularity in morphological systems is the following: does a system's having high irregularity in one morphological system make the language more prone to high irregularity in other morphological processes? That is, does the tolerance transfer across grammatical categories? The most promising candidate for a morphological sub-system which may support this hypothesis seems to be Nuer verbs which, superficially at least, resemble Nuer nouns morphologically. This may be an illusion, however, should Nuer's verb system prove to be analogous to Dinka, where stem changes in verbs are motivated and regular (Anderson 1995). A careful investigation of Nuer verbs would be necessary to see if they are analogous to the complex Dinka verbs in this respect.

#### **4.2 The Status of the Productive Rule**

I have only done a preliminary investigation into the issue of productivity in Nuer through nonce forms. Productivity is often considered to be a gradient phenomena (Anshen and Aronoff 1989, Aronoff 1980, Bybee and Slobin 1982 et al.) but I have found no evidence for this here.



The data I have examined above suggests that productivity (as I defined it in the beginning of section 3) is not gradient at all for Nuer nouns – it is a property that privileges a single rule above other processes that compete with it. A morphological correspondence such as nominative singular → nominative plural has close to 100 morphological processes but only /nɪ/ suffixation is productive. Clearly productivity is not simply a reflection of the frequency of rules involved in the process.

Also surprising, perhaps, is that the productive rule is the only rule of affixation for each case and number. In the nominative plural derivation, more than 75% of the data are derived by stem change, however, the nature of the stem changes are widely scattered so that none of the individual stem change processes account for more than 15% or so of the data.

#### **4.2.1 “Naturalness” of Stem Change and Affixation**

Bybee and Newman (1995) claim that stem change and affixation are of equal psycholinguistic “naturalness”. However, in Nuer, the noun morphology is dominated by stem changes, yet even here, the one affixing process is privileged as the productive one. Why should this be the case if stem change and affixing are equally natural?

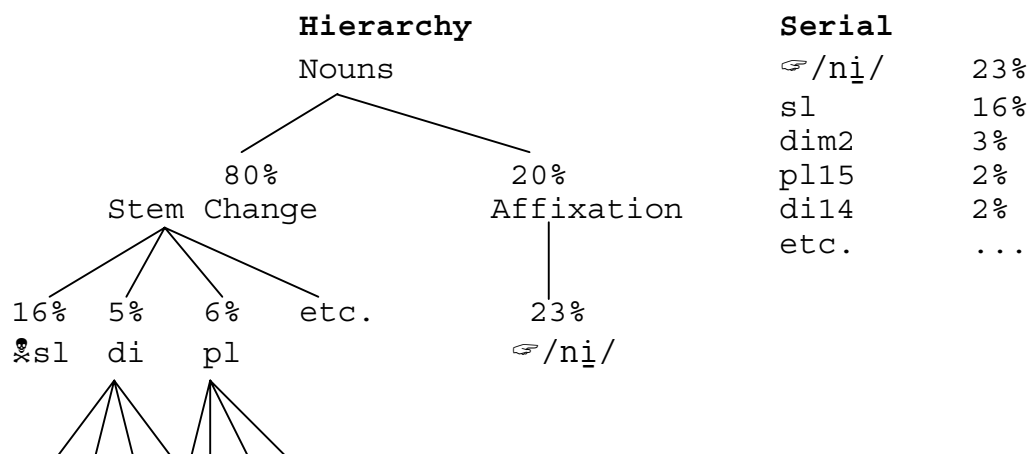
Bybee's psycholinguistic experiments, which utilized only native speakers, may benefit greatly from future work with Nuer speakers; certain of her results were attributed to her "subjects' prior experience with natural language(s) in which...there is a strong tendency for stem change to be associated with irregularity and for affixes to be associated with regularity." (Bybee and Newman 1995, p. 652) Because Nuer has more irregular verbs with stem changes than English and very few with affixes, the tendency she is referring to may be stronger in speakers of Nuer, since they associate stem changes with irregularity and affixation with regularity even more strongly.

#### **4.2.2 Productivity and Analogy**

Nuer's noun morphology is also of interest because the productive process accounts for only a small minority of the forms in the language. Nuer contains the type of morphology which is needed to help linguists tease out more information on the notion of productivity. For example, analogy is one tool linguists have used to account for generalization to new forms. By these accounts, (e.g. Bybee 1995) when a new form is encountered, the language user scans his/her inventory of words of the same grammatical category for the most common process, and produces a derived form of the new word using that process (or by analogy with a token which employs that process). The Nuer data I have analyzed shows

that processes must be listed serially, not hierarchically, because the under a hierarchical productive rule assignment view, the most product stem change would be the most frequent member of the most frequent *type* of morphological process. Empirically, it seems that the most frequent *process* must be the one selected.

**Figure 4: Hierarchical vs. Serial Productive Rule Assignment**



This again presumes productivity to be an all-or-nothing choice. If more detailed investigations of Nuer nouns showed that productivity had a wider distribution, a more complex model would be necessary.

#### 4.3 The Relationship Between Basic and Derived Forms

Interesting questions arise as to the nature of the relationship between singular forms and plural ones. If singulars are not predictable from plurals, then each must

have a lexical specification of form. If each has a separate lexical entry, why aren't they subject to the kind of semantic drift that other lexical entries are; that is, why does the semantic relation between singulars and plurals remain so transparent when the form of the words is so convoluted? Furthermore, how do we explain what regularity we do find in these words? – plurals, after all, are not suppletive – if each case and number has a lexical entry, why do certain properties of the noun form *not* change. In fact, except in the three suppletive forms in the data, the first consonant in each nominative singular form is the same as the first consonant in the other five forms. The vowels almost always vary, and the final consonants occasionally vary but never the first consonant. What we seem to have is a very low degree of morphological regularity, but a very high degree of morphological *sub*-regularity.

Due to the high occurrence of identical forms in the data, one promising theoretical framework to consider is that of *rules of referral* and *rules of exponence* (Stump 1993). Rules of referral as discussed in (Stump 1993) explain syncretism<sup>6</sup> in inflectional paradigms, such as the identity between Nuer genitives and locatives. Rules of exponence are used to account for other inflectional behavior such as

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<sup>6</sup> Stump, citing Carstairs (1987), defines this as "systematic inflectional homonymy".

affixation and presumably stem change as well. The genitive/locative correspondence would merit the application of a rule of referral of one class to the other. Because this particular example is symmetric, the rule could define locatives as having the same form as genitives or vice versa. The types of rules Stump proposes have useful applications for a discussion of Nuer, except he does not elaborate a discussion of how his system would generate irregularity. We can see, however, that if rules of exponence and referral could be constrained to apply only to a specified part of a word, then we have a natural way of describing, for example, the derivation of genitive plurals from nominative plurals. The stem is produced via a rule of referral from the nominative plural, subsequently a rule of exponence assigns it the appropriate suffix /nɪ/. If a genitive plural irregularly consists of the nominative singular with a /nɪ/ suffix, then we can describe the rule of referral as irregularly pointing to the nominative singular. A glance at the data will show that in a significant portion of the data irregularity results from regular suffixation to the "wrong" stem. In Table 37, the stem affixed seems to be genitive singular instead of nominative plural.

**Table 37**  
**Irregular Rule of Referral, Regular Rule of Exponence**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
wind	jɪɔ̃m	joam	jɪ̃am	jɪ̃amni	jɪ̃am	jɪ̃amni

The genitive plural form in Table 37 bears the regular suffix for its class, /nɪ/. However, the stem which is affixed is not the nominative plural form, as it would be in a regular paradigm. Instead, the affix seems to be applied to the genitive singular form, *jɪ̃am*. Using Stump's terminology, we could say that the rule of exponence is regular, but the rule of referral irregularly refers to the genitive singular form instead of the genitive plural form. Alternatively, a rule of exponence can be irregular while the rule of referral is regular. Though this is attested in the data, as in Table 38, it is not as common as the phenomenon described above.

**Table 38**  
**Regular Rule of Referral, Irregular Rule of Exponence**

English	Nom Sg	Nom Pl	Gen Sg	Gen Pl	Loc Sg	Loc Pl
peace	mal	maal	malä	malɪ	malkä	malɪ

The genitive singular above has the same stem as the nominative singular, in accordance with the regular rule. However, only /ä/ is suffixed instead of the regular /kä/. Thus the rule of exponence is irregular, but the rule of referral is regular. It is unclear whether this type of

descriptive advantage was ever envisioned by Stump or others working this tradition. This kind of partial regularity is not captured in the description of Nuer nominal morphology that I have presented in this thesis.

Bybee and Slobin (1982) discuss "schemas" and productivity within irregularity, citing generalizations of the patterns of past tense verbs to other verbs in error data. Such a study was not feasible in this case, but based on my findings, particularly my finding that only one process is productive, such generalization errors would be unexpected here.

Zager (1980) introduces the notion of source-oriented vs. product-oriented modifications. Source-oriented modification is the more familiar, and complies with most derivational accounts, where an input form is modified in some precise way to yield an output form. The concept of product-oriented modification is used to account for the generalization that a derivational account of English past tense verb forms would not group together forms such as *drew*, *blew* and *flew* because their source forms, *draw*, *blow* and *fly* do not meet the conditions for a natural phonological class. Unfortunately, product-oriented modification does not seem able to account for the data analyzed here because there do not seem to be very robust

examples of a "clustering effect" among outputs like nominative plural, genitive singular, etc.

Bybee and Moder (1983) describe irregularity in terms of family resemblances and prototype theory (Wittgenstein 1953). This type of analysis too encounters difficulty in the face of the Nuer data. Superficially, the theory would seem to describe quite well the pattern of irregularity found here. There is a strong degree of resemblance of singulars to their plurals, nominatives to their genitives, etc., and the patterns of irregularity also resemble each other, there being in each case some modification of stem vowel or coda consonant quality. However, isolating individual changes and assigning them the property of being closer or farther from a prototype, as in Bybee and Moder (1983) is problematic. What is the "best" stem change or combination of stem changes? Is it vowel length because it is the most frequent? If so, this would not predict the appearance of shortening. Is a pair that combines all of the individual processes the prototype? This too seems unlikely given that the changes in vowel quality rarely change it drastically as would result if all the processes co-occurred.

Bybee (1995) is perhaps the exception here – her theory of stronger and weaker lexical connections may be better suited



than most theories to show structure within irregular forms. Connections between lexical forms occur on the segmental and supersegmental levels. Like a cable composed of many wires, an individual wire or two may be snipped without threatening the integrity of the cable (or connection between the forms). Her theory has the advantage of being able to theoretically model similarities between and among irregular forms. Thus in the pair, *tuar/tuaar*, 'bee.nom.sg'/'bee.nom.pl', connections from /t/, /u/, /a/ and /r/ represent the lexical meaning, and the length feature of the /a/ represents the nominative plural meaning. If connections among plural morphemes are not very strong, that correctly represents the fact that except for /nɪ/ suffixation, plural is a meaning that is not specified very strongly in parallels of form (indicating a low degree of form/function correspondence in the plural morpheme).

The above discussion is not intended to imply that these studies were misguided simply because the Nuer data eludes them. But their ideas do not transfer well to Nuer, nor were they intended to. It is only to show the difficulty in accounting for Nuer in morphological theory. Perhaps this is because linguists' theories of morphology are fundamentally designed to account for regularity, whether through derivation, optimal candidate selection, or transformation.

Nuer's noun morphology has a fundamentally *irregular* component to it, so most morphological theory doesn't have much to say about Nuer nouns beyond the statement of the productive (regular) rule and enumeration of irregular forms. If the goal of linguistic inquiry is to show regularity where none was previously visible, then a highly irregular system is going to be uninteresting except to the extent that regularity can be found. If linguistics is a "classificatory science" (Hockett 1942), then analysis of a system not yet classified is enlightening regardless of whether or not it can be made to look orderly.

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## Appendix

In this part of the thesis I will present all of the data which I collected. Table 37 contains the six forms of the words I collected alphabetized by the English translation.

**Table 39**  
**All Data**

English	nom sg	nom pl	gen sg	gen pl	loc sg	loc pl
animal	ley	leey	läv	leeyni	läv	leeyni
ant	ɲiec	ɲiic	ɲieckä	ɲiicni	ɲieckä	ɲiicni
arm (upper)	wuɔk	wuɔɔk	wuɔkkä	wuɔkni	wuukä	wuɔɔkni
arm from shoulder	tët	tet	tëtkä	tetni	tëtkä	tetni
ash (dung)	puɔk	puuk	pukkä	puɔkni	pukkä	puukni
ash (wood)	ɲëëth	ɲeth	ɲëthkä	ɲethni	ɲëthkä	ɲethni
back	jok	jiɔk	jok	jiɔkni	jok	jiɔkni
bad blood	nueer		nueerkä		nueerkä	
bag	gök	göök	gökkä	gökkä	gökkä	göökni
banana	bele	beleni	belekä	beleni	belekä	beleni
bark (dog)	gua	guiäni	guikä	guiäni	guikä	guiäni
bark (tree)/peel	kɔm	kɔɔm	kɔmkä	kɔɔmni	kɔmkä	kɔɔmni
barn	luak	lueek	luaak	lueekni	luak	luaak
basket	ɣöth	ɣöthni	ɣöthkä	ɣööthni	ɣöthkä	ɣööthni
bean	ɲɔar	ɲɔaar	ɲɔarkä	ɲɔaari	ɲɔrkä	ɲɔaari
bear	let	leet	let	leetni	let	leetni
bee	tuaar	tuar	tuar	tuari	tuar	tuari
belly	jic	jiic	jic	jiicni	jic	jiicni
bird	dit	diit	diet	diitni	diet	diitni
blood	riem	rim	riem	rimni	riëm	rimni
body	puɔny	puäny	puäny	puänyni	puäny	puänyni
bone	cɔv	cɔɔv	cɔɔvka	cɔɔni	cɔɔvka	cɔɔni
boo-boo	buɔt	buɔɔt	butkä	buɔɔtni	butkä	buɔɔtni
boy	dhöl	dhool	dhɔl	dhooli	dhɔl	dhooli
branch	ɲɔäk	ɲɔääk	ɲɔäkkä	ɲɔääkni	ɲɔäkkä	ɲɔääkni
breast	thiɲ	thin	thiän	thiini	thiän	thiini
brother	domar	domaari	domaar	domaari	domaar	domaari
brother2	gatmar	gaatmar	gatmaar	gaatmaari	gatkämaar	gaatmaari
buffalo	mök	möök	mɔk	möökni	mɔk	mɔkni
bug	baan	baani	baankä	baani	baan	baani
bull1	thak	thääk	thäak	thääni	thäak	thääni
bull2	tuut	tut	tuɔt	tutni	tuɔt	tutni

bump (bruise)	pony	poony	ponykä	poonyni	ponykä	poonyni
butterfly	yaṅkuoth	yaṅkuothni	yaṅkuothkä	yaṅkuothni	yaṅkuoth	yaṅkuothni
buttock	tat	tät	taatkä	taadni	taatkä	taadni
camel	thoror	thoroli	thororkä	thoroli	thororä	thoroli
cane	roany	rony	roanykä	ronyni	roanykä	rony
cat	nyaw	nyawni	nyaawkä	nyawni	nyaawkä	nyawni
centipede	närmuon	näärmoni	närmuonkä	näärmoni	närmuonkä	näärmoni
chair	kom	koamni	koam	koamni	koam	koamni
chest	kaw	kaath	kath	kaathni	kath	kaathni
child	gat	gaat	gatkä	gaan	gatkä	gaat
childless widow	këë	key	keekä	keyni	keekä	këyni
chin	tik	tiik	tiäk	tiikni	tiikkä	tiikni
cloth	bi/biy	biäni	biey	biäni	biey	biäni
cloud/fog	tik	tiäk	tiäk	tiakni	tiäk	tiakni
coll. of things		ṇoak		ṇoakni		ṇoakni
color	biel	biiel	bielkä	biieli	bielkä	biieli
conflict	ter	tær	ter	tær	ter	tær
cookie	patpat	patpatni	patpatkä	patpatni	patpatkä	patpatni
cotton	lath	laathni	lath	laathni	lath	laathni
cough	käk	kääk	käkkä	kaakni	käkkä	kaakni
cow	yaṇ	ṛok	yaṇ	ṛok	yaṇ	ṛok
crocodile	nyaṇ	nyäṇ	nyaṇ	nyäṇni	nyaṇ	nyäṇni
cup	cuk	cuok	cukkä	cuokni	cukkä	cuokni
cup2	lier	liäri	lierkä	liäri	lierkä	liäri
cup3 (iron)	yiöm	yiöom	yiömkä	yiöomni	yiömkä	yiöomni
dam	kek	këek	këk	këekni	kekä	këekni
desert	pan	paan	paan	paani	paan	paani
dirt	tuäk	tuak	tuääk	tuakni	tuääk	tuakni
dirt2	mun	mon	muon	moni	muon	moni
dish	tuok	tuok	tuook	tuooni	tuookä	tuooni
divinity	kuoth	kuuth	kuoth	kuuthni	kuoth	kuuthni
dog	jiök	jiöök	jiok	jiöoni	jiöok	jiöoni
door	thiik	thiikni	thiak	thiakni	thiak	thiakni
dream	läk	lääk	läkkä	laakni	läkkä	laakni
drum	bul	buol	buool	buoli	buool	buoli
dung	wäär	wer	wäärkä	weri	waar	wär
ear	jith	jithni	jithkä	jithni	jithkä	jithni
egret	böön	boonni	böönkä	boonni	böönkä	boonni
elbow	ciel	cieli	ciel	cieli	cielä	cieli
elephant	guor	guur	guar	guari	guar	guari
end of milking	bëël		bëël		bëël	
erection	tät	tät	tätkä	tatni	tätkä	tatni
eye	waṇ	wän	waṇ	wäänni	waṅkä	wäänni
face	nhiam	nhiam	nhiam	nhiamni	nhiam	nhiamni
fat/oil	lieth	lith	liethkä	lithni	lieth	lithni



Feb/Mar/Apr	mäy	mäyni	mäy	mäyni	mäy	mäyni
fence	kal	kāl	kal	kāl	kal	kāl
fiance	kuut	kuutni	kuutkä	kuutni	kuutkä	kuutni
filled hole	dīr	dīār	dīār	dīār	dīār	dīār
finger	yiat	yiet	yiatkä	yietni	yiatkä	yietni
ingernail	riöp	rööp	röp	riöpni	riöpkä	riöpni
fire/gun	mac	māc	maac	mācni	maac	mācni
firstborn	kāy	kāy	kāākkä	kāyni	kāākkä	kāyni
fish	rec	rēc	rāc	rēcni	rāc	rēc
flag	bēer	bēri	ber	bēri/bēeri	ber	bēri
flour (wheat)	bapro		baprokä		baprokä	
flower	gaak	gaakni	gaakkä	gaakni	gaakkä	gaakni
fly	luaṇ	luaaṇ	luaṇkä	luaaṇni	luaṇkä	luaaṇni
food	kuän	kuan	kuän	kuaan	kuän	kuaan
foot	pätciök	pätciökni	pätcokä	pätcokni	pätcokä	pätcokni
friend	määth	mäthni	määthkä	mäthni	määthkä	mäthni
front of body	bap	baapni	baap	baapni	baap	baapni
fruit	dojiäth	deyjien	dojiäth	deyjien	dokäjiäth	deynijien
fruit2	dowäl	deywal	dowäl	deyniwal	dowäl	deywal
gazelle	kew	kēc	kewkä	kēcni	kewkä	kēcni
giraffe	guc	guc	guc	gucni	guc	gucni
girl	nyal	nyiār	nyal	nyiät	nyaal	nyiät
goat	böw	böwni	böwkä	böwni	böwkä	bööwni
goat2	dēl	det	dēl	dētni	dēl	deet
goose	tuṭ	tuṭni	tuṭkä	tuṭni	tuṭkä	tuṭni
gourd	guc	guc	guc	gucni	guc	gucni
grass	juac	juaac	juackä	juacni	juackä	juacni
growl	ṇäär	ṇäär	ṇäärkä	ṇäär	ṇäär	ṇäär
grunt	kuom		kuomkä		kuomkä	
guitar	thuom	thuomni	thuom	thuomni	thuom	thuomni
hair	nhim	nhiām	nhim	nhiāmni	nhimkä	nhiāmni
hammer	puṭ	puṭni	puṭkä	puṭni	puṭkä	puṭni
hand2	pätet	pätetni	pätetkä	pätetni	pätetkä	pätetni
head	wic	wiic	wiäc	wiicni	wickä	wiicni
heart	loc	lōc	loac	lōcni	loac	lōcni
heel	ṇulciök	ṇulciökni	ṇulciök	ṇulciökni	ṇulciökä	ṇulciökni
hippo	row	rööth	roa	rööthni	roa	rööthni
hole	puul	puṭ	puṭ	puṭ	puṭ	puṭ
homosexual	koor	kor	koorkä	kor	koorkä	kor
hoof	barkay	barkayni	barkaykä	barkay	barkaykä	barkayni
hoof	miṭ	miṭni	miṭkä	miṭni	miṭkä	miṭni
horn (flute)	kaaṇ	kaaṇni	kaaṇkä	kaaṇni	kaaṇkä	kaaṇni
house	duel	duel	duel	dueli	duel	dueli
hunter/bow	bār	bār	bārkä	bār	bārkä	bār
husband	cōw	cōw	cōa	cōwni	cōa	cōwni

hyena	yak	yāak	yakkä	yaakni	yakkä	yaakni
injection	tuom	tum	tuomkä	tumni	tuom	tumni
insignif. thing	baŋ	baŋbaaŋni	baaŋ	baŋbaaŋni	baŋkä	baŋbaaŋni
itinerant	look	loakni	lookä	loakni	lookä	lookni
judge	kuāarluk	kuäär	kuärluok	kuäri	kuāarlukkä	kuäri
judge2	muukluk	muok	mukkä	muokni	muukäluok	muokni <sub>luk</sub>
judgement	luk	luokok	luok	luokni		
kind/type	tää	tää				
knee	muol	muäl	muäl	muäli	muälä	muäli
knife	ŋom	ŋoämn <sub>i</sub>	ŋoäm	ŋoämn <sub>i</sub>	ŋoäm	ŋoämn <sub>i</sub>
knot (in tree)	tēt	tēt	tētkä	tētn <sub>i</sub>	tētkä	tētn <sub>i</sub>
leader	kuar	kuär	kuäär	kuääri	kuäär	kuääri
leaf	jithjiath	jithjien	jithkäjia <sub>t</sub> h	jithjien	jithkäjia <sub>t</sub> h	jithnijien
leg	ciök	cök	ciökä	cökni	ciökä	cökni
leopard	thoän	thoon	thonkä	thooni	thonkä	thooni
life	tek		tek		tekä	
lion	lony	luony	lony	luonyni	lony	luony
load	deth	deeth	deth	dethni	deeth	deethni
locust	koryom	koryomni	koryoam	koryoamni	koryiömkä	koryoamni
lung	puäth	puoth	puäthkä	puothni	puhkä	puothni
magician	tiet	tīt	titkä	titni	titkä	titni
man	wut	wuni	wutkä	wuni	wutkä	wuni
marriage	kuën	kuëen	kuën	kuëni	kuën	kuëni
May/Jun/Jul	ruel	ruël	ruel	ruël	ruel	ruëli
meat	riŋ	riiŋ	riäŋ	riiŋ	riäŋ	riiŋ
medicine	wäl	waal	wäl	waal	wäl	waal
milk	cak	cāk	caak	cāk	caak	cākni
millipede	kolkol	kolkoli	kolkolä	kolkoli	kolkolä	kolkoli
money		kään		käänni		käänni
monkey	gook	goakni	gookkä	goakni	goak	goaakni
moon	pay	päth	path	päthni	path	päthni
mosquito	nyiith	nyiethni	nyieth	nyiethni	nyieth	nyiethni
mother	man	mani	man	mani	man	mani
mountain	päm	pääm	paam	päämni	paam	paamni
mouse	bilduop	bilduopni	bilduopä	bilduopni	bilduopä	bilduopni
mouth	thok	thuuk	thuk	thuukni	thok	thuukni
name	ciot	cioot	ciotkä	ciootni	ciotkä	ciootni
narrows	mät	mat	matkä	mät <sub>i</sub>	matkä	mät <sub>i</sub>
navel	look	lok	look	lokni	look	lookni
neck	ŋuäk	ŋuak	ŋuääk	ŋuakni	ŋuääk	ŋuakni
necklace	tiik	tiëk	tiëk	tiëkni	tiëk	tiëkni
needle	libe	libeni	lipekä	lipeni	lipekä	lipeni
night	waar	waari	wär	waari	wär	waari
nightmare	par	paar	par	paari	pärkä	paari

nonsense2	theluoṭ	theluoṭni	theluoṭkā	theluoṭni	theluoṭkā	theluoṭni
nonsense3	dhok	dhōāk	dhokkā	dhokni	dhokkā	dhokni
nose	wum	wuum	wuom	wuumni	wuom	wuumni
Nov/Dec/Jan	jiom	jiam	jiom	jiomni	jiom	jiam
ocean	ḅāḅdit	ḅāḅdiitni	ḅāḅdiitkā	ḅāḅdiitni	ḅāḅdiitkā	ḅāḅdiitni
oxbow lake	lil	lili	lilkā	lili	liel	lili
pail	ṭook	ṭookni	ṭokṭokkā	ṭokṭokni	ṭookā	ṭokṭookni
peace	mal	maal	malā	malṭ	malkā	malṭ
person	raan	naath	ran	nath	ran	nath
picture	thuure	thuurenṭ	thuurekā	thuurenṭ	thuurekā	thuurenṭ
pig	ḍiār	ḍiārṭ	ḍiār	ḍiārṭ	ḍiār	ḍiāārṭ
pillow	thāne	thānenṭ	thānekā	thānenṭ	thānekā	thānenṭ
place	guāāth	guāth	guāth	guāthni	guāth	guāthni
place/time	gōā	gōāth				
plant	dey	dejuacni	doa	deynṭ	doa	deynṭ
pond	löl	lōli	lōolkā	lōli	lōolkā	lōli
pot	dhaar	dhārṭ	dhar	dhāārṭ	dhar	dhāārṭ
potato	tac	tacni	tackā	tacni	tac	tacni
prophet	gök	gōok	gökkā	gōokni	gökkā	gōokni
punch	piām	piāam	piāmka	piāamni	piṃkā	piāamni
rank 1	gatṭ	gaatuutni	gatṭkā	gaatuutni	gatṭkā	gaatuutni
rank 2	kaār	kaārṭ	kuāārka	kaārṭ	kuāārka	kaārṭ
rank 3	lām	lāmni	lāmka	lāamni	lāmka	lāmni
rank 4	bok	bokni	bok	bokni	bok	bokni
rat	kun	kuon	kōn	kuonṭ	kōn	kuonṭ
ring	nyanyet	nyanyetni	nyanyet	nyanyetni	nyanyetka	nyanyetni
river	yieer	yiēr	yleer	yiērṭ	yieer	yiērṭ
ruler	keek	keekni	keekkā	keekni	keekkā	keekni
sand/clay	liet	lit	litkā	litni	litkā	litni
scab	goak	gok	gokkā	gokni	gokkā	gokni
scorpion	jiith	jieth	jieth	jiethni	jieth	jiethni
sea	kiir	kiēr	kieer	kiērṭ	kieer	kiērṭ
sept/oct	ṭōṭ	ṭōṭni	ṭōṭkā	ṭōṭni	ṭōṭkā	ṭōṭni
September	laath	lēthni	laathkā	laathni	laathkā	laathni
sheep	roam	room	roamka	roomni	roamka	roomni
shirt	luṭ	luṭṭ	lutkā	luṭṭni	lutkā	luṭṭni
shoe	war	wāārṭ	warkā	wāārṭ	war	wāārṭ
shoulder	jiar	jiēr	jiar	jiārṭ	jiar	jiārṭ
sister	nyimar	nyīamari	nyimar	nyīamari	nyimar	nyīamari
size	peek	pek	peekā	pekni	peekā	pekni
skin	guop	guup	gupkā	guupni	gupkā	guupni
sky	puäär	puārṭ	puäärka	puārṭ	puärä	puārṭ
slap	pät	pāt	pätkā	pätni	pätkā	pätni
snail	com	ciöm	comkā	ciömni	comkā	ciömni
snake	thol	thōl	thōäl	thōoli	thōäl	thōoli

sneeze	thiam	thiem	thiamkä	thieemni	thiamkä	thieemni
snot	thuny	thuuny	thunykä	thuunyni	thunykä	thuunyni
song	dit	diit	diet	diin	diet	diitni
sound	jow	ji <sup>o</sup> th	jiath	ji <sup>o</sup> thni	joaw	ji <sup>o</sup> thni
spit	ruey	ru <sup>e</sup> yni	ru <sup>e</sup> ykä	ru <sup>e</sup> yni	ru <sup>e</sup> ykä	ru <sup>e</sup> yni
spit from cough	kiel	kiil	kielkä	kiili	kielkä	kieli
splash (anim)	guan	guan <sup>n</sup> i	guan <sup>n</sup> kä	guan <sup>n</sup> i	guan <sup>n</sup> kä	guan <sup>n</sup> i
splash (big)	man	man <sup>n</sup> i	man <sup>n</sup> kä	man <sup>n</sup> i	man <sup>n</sup> kä	man <sup>n</sup> i
splash (little)	cub	cug <sup>b</sup>	cubkä	cug <sup>b</sup> ni	cubkä	cug <sup>b</sup> ni
spoon	tun	tu <sup>o</sup> n	tu <sup>o</sup> on	tu <sup>o</sup> n <sup>n</sup> i	tu <sup>o</sup> on	tu <sup>o</sup> n <sup>n</sup> i
spoon2	gu <sup>e</sup> k	guiik	gu <sup>e</sup> kkä	guiik <sup>n</sup> i	gu <sup>e</sup> kkä	guiik <sup>n</sup> i
steamer	babur	baburi	babuurkä	babuuri	babuurkä	babuuri
stone	döl	dool	dölkä	dooli	dölkä	dooli
sun	cän	cän <sup>n</sup> i	cään	cän <sup>n</sup> i	cään	cän <sup>n</sup> i
table	jön	jön <sup>n</sup> i	jiönkä	jön <sup>n</sup> i	jiön	jiön <sup>n</sup> i
tamarind	koat	kot	kotkä	kot <sup>n</sup> i	koata	kot <sup>n</sup> i
thief	wan	wään	waänkä	wään	waänkä	wääni
thief2	cuar	cueer	cuarkä	cueeri	cueer	cueeri
thorn	kuock	kuiy	kuockkä	kuiyni	kuockkä	kuiyni
tiger	kuac	kuac <sup>n</sup> i	kuac	kuac <sup>n</sup> i	kuac	kuac <sup>n</sup> i
tongue	lep	lëöp	löp	lëöp <sup>n</sup> i	löp	lëöp <sup>n</sup> i
tooth	lec	l <sup>e</sup> ec	lec	l <sup>e</sup> ec	läy	l <sup>e</sup> ec
tortoise	kuëët	kuet	kuëët	kuet <sup>n</sup> i	kuëët	kuëët
tray	pat	paat	patkä	paat <sup>n</sup> i	patkä	paat <sup>n</sup> i
tree01	koar	koari	korkä	koari	koar	koaari
tree02/star	kuel	kueli	kuelkä	kueli	kuelkä	kueli
tree03	thokier	thokieri	thokierkä	thokieri	thokierkä	thokieri
tree04	cuaydok	cuaydok <sup>n</sup> i	cuaydokkä	cuaydok <sup>n</sup> i	cuaydokkä	cuaydok <sup>n</sup> i
tree05	dhuony	dhuonyni	dhuony	dhuonyni	dhuony	dhuonyni
tree06	gok	gok <sup>n</sup> i	gokkä	gok <sup>n</sup> i	gokkä	gok <sup>n</sup> i
tree07	mëth	mëth <sup>n</sup> i	mëth	mëth <sup>n</sup> i	mëth	mëth <sup>n</sup> i
tree08	nop	nop <sup>n</sup> i	noäp	nop <sup>n</sup> i	noäap	nop <sup>n</sup> i
tree09	riëk	riëk <sup>n</sup> i	riëkkä	riëk <sup>n</sup> i	riëkkä	riëk <sup>n</sup> i
tree10	luor	luori	luorkä	luori	luorkä	luori
tree11	këc	k <sup>e</sup> ec	këckä	k <sup>e</sup> ec <sup>n</sup> i	këckä	k <sup>e</sup> ec
tree12	queer	quër	guer	quëri	guer	quëri
tree13	thow	thoäär	thoä	thoäri	thoä	thoäri
tree14	buaw	boow	buokä	boawni	bowkä	boawni
tree15	jiath	jien	jiaath	jien	jiaath	jien
umbilical cord	caar	caari	caarä	caari	caarä	cääri
valley	täp	tap	tapkä	tääp <sup>n</sup> i	tapkä	tap <sup>n</sup> i
village	dhör	dhör	dhoar	dhöri	dhoar	dhöri
village	wec	wiiv	wec	wiiv <sup>n</sup> i	wec	wiiv <sup>n</sup> i
vulture	kaat	kät	kaat	kät <sup>n</sup> i	kaat	kät <sup>n</sup> i
water		piw		pieni		pieni

water plant	bɔɔr	bɔri	bɔrkä	bɔri	bɔärkä	bɔäri
widow	kää	key	kääkä	keyni	kääkä	keyni
wind	jiɔm	joam	jiäm	jiämni	jiäm	jiämni
windstorm	thul	thuɔl	thuɔɔl	thuɔli	thuɔɔl	thuɔli
woman	ciäk	män	ciäk	mään	ciäk	mään
yawn	ɲaam	ɲäm	ɲaamkä	ɲämni	ɲaamkä	ɲämni
zebra	cɔtrial	cɔtriali	cɔtrial	cɔtriali	cɔtrial	cɔtriali

The next table shows all nominative singular and plural forms. In the column labeled *np change*, the differences between the singular and plural forms are listed. The symbols used in this column correspond to the primitive changes elaborated in section 3.2.1 above (sl = lengthening, sl- = shortening, ni = /ni/ suffixation, b = breathiness added, b- = breathiness removed, diX = diphthongization process #X, dimX = monophthongization process #X, plX = place change #X, conX = consonant change #x). There are a few exceptions to this. "syll" stands for the addition of a syllable which was not in the nominative singular. "nfp" and "nfs" stand for *no plural form* and *no singular form* respectively. "nodif" means that the nominative singular and nominative plural forms are identical. In the column labeled *lch?*, a "w" appears if there is a form missing for one of the words or if nominative singular and plural stand in a suppletive relationship to one another. An "x" appears if only one process is required to account for the difference between nominative singular and plural forms.

**Table 40**  
**Nominative Plural**

English	nom s	nom pl	np ch	1ch?
bad blood	nueer		nfp	w
end of milking	bëëł		nfp	w
flour (wheat)	bapro		nfp	w
grunt	kuom		nfp	w
life	tek		nfp	w
water plant	bōōr		nfp	w
coll. of things		ŋoak	nfs	w
money		kääŋ	nfs	w
water		pīw	nfs	w
cow	yaŋ	ɣōk	sup	w
person	raan	naath	sup	w
woman	ciek	mān	sup	w
buttock	tat	tāt	b	x
crocodile	nyaŋ	nyāŋ	b	x
eye	waŋ	wāŋ	b	x
fire/gun	mac	māc	b	x
breast	thīn	thin	b-	x
food	kuān	kuan	b-	x
knot (in tree)	tēt	tet	b-	x
firstborn	kāɣ	kāy	con14	x
place/time	gōä	gōäth	con15	x
drum	bul	buol	di13	x
spoon	tuŋ	tuōŋ	di13	x
cup	cuk	cuōk	di14	x
rat	kun	kuōn	di14	x
splash (little)	cub	cuōb	di14	x
windstorm	thul	thuol	di14	x
lion	lony	luony	di22	x
hair	nhim	nhīām	di4	x
filled hole	dīr	dīār	di6	x
cloud/fog	tīk	tīāk	di7	x
sister	nyīmar	nyīāmari	di7	x
nonsense3	dhōk	dhōāk	di9	x
leg	cīök	cōk	dim1	x
blood	riēm	rim	dim2	x
cane	roany	rōny	dim2	x
fat/oil	liēth	lith	dim2	x
injection	tuōm	tum	dim2	x
magician	tīet	tīt	dim2	x
sand/clay	liēt	lit	dim2	x
scab	goak	gok	dim2	x
tamarind	koat	kot	dim2	x

banana	bɛle	beleni	ni	x
basket	ʋöth	ʋöthni	ni	x
bug	baan	baani	ni	x
butterfly	yaŋkuoθ	yaŋkuoθni	ni	x
camel	θorɔr	θorɔli	ni	x
cat	nyaw	nyawni	ni	x
cookie	patpat	patpatni	ni	x
ear	jith	jithni	ni	x
elbow	ciɛl	ciɛli	ni	x
Feb/Mar/Apr	mäy	mäyni	ni	x
fiance	kuut	kuutni	ni	x
flower	gaak	gaakni	ni	x
foot	pätciök	pätciökni	ni	x
goat	böw	böwni	ni	x
goose	tuɔt	tuɔtni	ni	x
growl	ŋäär	ŋääri	ni	x
guitar	thuom	thuomni	ni	x
hammer	puɔt	puɔtni	ni	x
hand	pätet	pätetni	ni	x
heel	ŋulciök	ŋulciökni	ni	x
hoof	miɔt	miɔtni	ni	x
hoof2	barkav	barkavni	ni	x
horn (flute)	kaaŋ	kaaŋni	ni	x
locust	koryom	koryomni	ni	x
millipede	kolkol	kolkoli	ni	x
mosquito	nyiith	nyiethni	ni	x
mother	man	mani	ni	x
mouse	bilduop	bilduopni	ni	x
needle	libɛ	libeni	ni	x
night	waar	waari	ni	x
oxbow lake	lil	lili	ni	x
pail	took	tookni	ni	x
picture	thuure	thuuren	ni	x
pig	diär	diari	ni	x
pillow	thänɛ	thäneni	ni	x
potato	tac	tacni	ni	x
rank 2	kaar	kaari	ni	x
rank 3	läm	lämni	ni	x
rank 4	bok	bokni	ni	x
ring	nyanyet	nyanyetni	ni	x
ruler	keek	keekni	ni	x
sept/oct	tɔt	tɔtni	ni	x
sky	puäär	puäri	ni	x
spit	ruɛy	ruɛyni	ni	x

splash (anim)	guaŋ	guaŋni	ni	x
splash (big)	maŋ	maŋni	ni	x
steamer	babur	baburi	ni	x
sun	cäŋ	cäŋni	ni	x
table	jöŋ	jöŋni	ni	x
tiger	kuac	kuacni	ni	x
tree02/star	kuel	kueli	ni	x
tree03	thoki <sub>er</sub>	thoki <sub>er</sub> i	ni	x
tree04	cuaydök	cuaydökni	ni	x
tree05	dhuony	dhuonyni	ni	x
tree06	gok	gokni	ni	x
tree07	mëth	mëthni	ni	x
tree08	ŋop	ŋopni	ni	x
tree09	riëk	riëkni	ni	x
tree10	luor	luori	ni	x
umbilical cord	caar	caari	ni	x
zebra	cotrial	cotriali	ni	x
finger	yiat	yiet	pl12	x
dirt	tuäk	tuak	pl15	x
erection	tät	tät	pl15	x
narrows	mät	mat	pl15	x
neck	ŋuäk	ŋuak	pl15	x
slap	pät	pät	pl15	x
valley	täp	täp	pl15	x
lung	puäth	puo <sub>th</sub>	pl16	x
leader	kuar	kuär	pl18	x
body	puony	puäny	pl21	x
knee	muol	muäl	pl21	x
dish	tuok	tuok	pl23	x
dirt2	mun	mön	pl32	x
house	duel	duël	pl7	x
May/Jun/Jul	ruel	ruël	pl7	x
arm from shoulder	tët	tet	pl9	x
animal	ley	leey	sl	x
arm (upper)	wuok	wuok	sl	x
bag	gök	göök	sl	x
bark (tree)/peel	köm	koom	sl	x
bean	ŋoar	ŋo <sub>a</sub> ar	sl	x
bird	dit	diit	sl	x
boo-boo	buot	buot	sl	x
branch	ŋäk	ŋääk	sl	x
brother	gatmar	gaatmar	sl	x
buffalo	mök	möök	sl	x
bump (bruise)	pony	poony	sl	x



child	gat	gaat	sl	x
chin	t <sub>i</sub> k	t <sub>i</sub> <u>i</u> k	sl	x
color	biɛl	bi <u>i</u> ɛl	sl	x
conflict	tɛr	t <u>ɛ</u> er	sl	x
desert	pan	paan	sl	x
dog	jiök	ji <u>ö</u> ök	sl	x
dream	läk	lä <u>ä</u> k	sl	x
fish	rɛc	r <u>ɛ</u> ec	sl	x
fly	luaŋ	lua <u>a</u> ŋ	sl	x
gazelle	kɛw	k <u>ɛ</u> ew	sl	x
giraffe	guc	gu <u>e</u> ec	sl	x
grass	juac	ju <u>a</u> ac	sl	x
head	wic	wi <u>i</u> c	sl	x
husband	cɔw	co <u>o</u> w	sl	x
load	deth	de <u>e</u> th	sl	x
marriage	kuën	ku <u>ë</u> ën	sl	x
meat	riŋ	ri <u>i</u> ŋ	sl	x
mountain	pām	p <u>ä</u> ām	sl	x
name	ciot	ci <u>o</u> ot	sl	x
nightmare	pār	pa <u>a</u> r	sl	x
nose	wum	wu <u>u</u> m	sl	x
peace	mal	ma <u>a</u> l	sl	x
shirt	luot	lu <u>o</u> ot	sl	x
size	peek	pe <u>k</u>	sl	x
snake	thol	th <u>o</u> l	sl	x
snot	thuny	thu <u>u</u> ny	sl	x
song	dit	di <u>i</u> t	sl	x
spit from cough	käk	k <u>ä</u> äk	sl	x
thief	wan	w <u>ä</u> an	sl	x
tray	pāt	pa <u>a</u> t	sl	x
tree01	koar	ko <u>a</u> ri	sl	x
bee	tuaar	tua <u>r</u>	sl-	x
bull2	tuut	tut	sl-	x
navel	look	l <u>o</u> k	sl-	x
place	guääh	gu <u>ä</u> th	sl-	x
tortoise	kuëët	ku <u>e</u> t	sl-	x
vulture	kaat	ka <u>t</u>	sl-	x
moon	pay	p <u>a</u> th	b/con10	
girl	nyal	ny <u>i</u> är	b/di16/con8	
widow	kää	key	b-/dim2/con16	
shoulder	jiar	ji <u>ä</u> r	b/pl12	
leaf	jithjiath	jithji <u>e</u> n	b/pl12/con4	
face	nhiam	nh <u>i</u> em	b/pl13	
sneeze	thiam	th <u>i</u> em	b/pl13	

fence	kal	kāl	b/pl15	
milk	cak	cāk	b/pl15	
chest	kaw	kāath	b/pl15/con2	
fruit2	dōwāl	dēywal	b-/pl20/con16	
fruit	dōjiāth	dēyjien	b-/pl20/pl12/con4	
Nov/Dec/Jan	jīom	jiam	b/pl21	
heart	loc	lōc	b/pl23	
village	dhōr	dhör	b/pl23	
snail	cōm	ciōm	di23/pl31	
back	jok	jīok	di24/pl24	
sound	jow	jīoth	di24/pl24/con2	
wind	jīom	joam	dim1/di10	
pot	dhaar	dhārī	ni/b	
cup2	liēr	liārī	ni/b/pl4	
plant	dēy	dejuacnī	ni/con12/syll	
man	wut	wunī	ni/con3	
knife	ḡom	ḡāmni	ni/di11	
bark (dog)	gua	guiānī	ni/di18/pl18	
cloth	biī/biy	biānī	ni/di7	
chair	kōm	koamni	ni/di8	
hunter/bow	bār	barī	ni/pl15	
egret	böönḡ	boönḡni	ni/pl28	
pond	löl	lōlī	ni/pl28	
insignif. thing	baḡ	baḡbaaḡni	ni/syll	
kind/type	tää	tää	nodif	
tree15	jiath	jien	pl12/con4	
judge	kuāarluk	kuäär	pl18/syll-	
goat2	dēl	det	pl2/con7	
belly	jic	jīic	sl/b	
bone	cōṽ	cōṽṽ	sl/b	
yawn	ḡaam	ḡām	sl-/b	
medicine	wāl	waal	sl/b-	
tree11	kēc	kēc	sl/b-	
ash (wood)	ḡēēth	ḡeth	sl-/b-	
childless widow	kēḡ	key	sl-/b/con16	
leopard	thoän	thōḡon	sl/b/dim2	
hyena	yak	yāk	sl/b/pl15	
bear	lēt	leet	sl/b/pl2	
hippo	row	rōöth	sl/b/pl23/con2	
boy	dhöl	dhool	sl/b-/pl27	
tongue	lēp	lēēp	sl/b/pl3	
gourd	guey	gueet	sl/con11	
scorpion	jiith	jīeth	sl-/di1	
tree13	thow	thōäär	sl/di11	

judgement	luk	luṡṡk	sl/di14	
hole	puul	puṡl	sl-/di14	
judge2	muukluk	muṡk	sl-/di14/syll-	
necklace	tiik	tiṡk	sl-/di2	
sea	kiir	kiṡr	sl-/di2	
centipede	närmuṡn	näärmṡni	sl/dim1	
finger nail	riöp	rööp	sl/dim1	
tree14	buäw	bṡṡw	sl/dim1/pl16	
ant	ṡiɛc	ṡiic	sl/dim2	
ash (dung)	puṡk	puuk	sl/dim2	
cough	kiɛl	kiil	sl/dim2	
divinity	kuoth	kuuth	sl/dim2	
elephant	guor	guur	sl/dim2	
sheep	roam	room	sl/dim2	
skin	guṡp	guup	sl/dim2	
brother2	domar	domaariṡ	sl/ni	
cotton	lath	laathniṡ	sl/ni	
front of body	bap	baapniṡ	sl/ni	
nonsense2	thɛluot	thɛluotniṡ	sl/ni	
ocean	bäbdit	bäbdiitniṡ	sl/ni	
door	thiṡk	thiṡkniṡ	sl-/ni	
friend	määth	mäthniṡ	sl-/ni	
homosexual	koor	korṡ	sl-/ni	
shoe	war	wääri	sl/ni/b	
flag	bɛɛr	bṡriṡ	sl-/ni/b	
itinerant	look	loakniṡ	sl-/ni/di8	
monkey	gook	goakniṡ	sl-/ni/di8	
September	laath	lṡthniṡ	sl-/ni/pl14	
spoon2	guṡk	guiik	sl/pl1	
barn	luak	lueek	sl/pl13	
dung	wäär	wer	sl-/pl13	
punch	piäm	piāam	sl/pl15	
thief2	cuar	cueer	sl/pl17	
bull1	thak	thääk	sl/pl18	
thorn	kuook	kuiy	sl-/pl19	
mouth	thok	thuuk	sl/pl26	
prophet	gök	gṡṡk	sl/pl26	
cup3 (iron)	yṡöm	yṡoom	sl/pl28	
stone	döl	dṡṡl	sl/pl28	
village	wec	wiṡɣ	sl/pl5/con9	

tooth	lec	lɛɛc	sl/pl6	
dam	kek	këëk	sl/pl7	
tree12	ɲueer	ɲuër	sl/pl7	
river	yieer	yiër	sl-/pl7	
rank1	gatɔt	gaatuutni	s1sl/ni/pl25	

The genitive singular data is highlighted in Table 39. The columns represent the English translation, the nominative singular, the genitive singular and the differences between nominative singular and genitive singular. Asterisks are found in the *gs ch* column next to those words where the genitive singular stem resembles some form more closely than the nominative singular (this is sometimes an imprecise and impressionistic demarcation).

**Table 41**  
**Genitive Singular**

English	nom s	gen sg	gs ch
hair	nhim	nhim	b
tongue	lɛp	lɛp	b
cotton	lath	lath	b/pl15
wind	jiɔm	jiɔm	b/pl22
fish	rɛc	rɛc	b/pl4
gourd	guey	gueth	con10
moon	pay	path	con10
chest	kaw	kath	con2
bird	dit	diɛt	di1
song	dit	diɛt	di1
knife	ɲɔm	ɲɔɔm	di11
snake	thɔl	thɔɔl	di11
tree08	ɲɔp	ɲɔɔp	di11
tree13	thɔw	thɔɔ	di11/con3
drum	bul	buɔɔl	di14
judgement	luk	luɔk	di14
nose	wum	wuɔm	di14
spoon	tuɲ	tuɔɔɲ	di14
dirt2	mun	muɔɔn	di14/sl

sound	jow	jiath	di15/pl21/con2
plant	dəy	doa	di17/pl4/con3
mouth	thok	thuok	di20/pl27
cloth	bi̩/biy	biey	di5
breast	thin	thiän	di6
chin	tik	tiäk	di6
head	wic	wiäc	di6
meat	riŋ	riän	di6
filled hole	dir	diar	di7
cloud/fog	tik	tiäk	di7*
chair	kōm	koam	di8
heart	loc	loac	di8
locust	koryom	koryoam	di8
village	dhor	dhoar	di8
hippo	row	roa	di8/con3
finger nail	riöp	röp	dim1
ant	ɲiɛc	ɲiɛckä	ka
arm (upper)	wuɔk	wuɔkkä	ka
arm from shoulder	tēt	tëtkä	ka
bad blood	nueer	nueerkä	ka
banana	bēle	belekä	ka
bark (tree)/peel	kōm	kōmkä	ka
basket	ʋöth	ʋöthkä	ka
bean	ɲɔar	ɲɔarkä	ka
branch	ɲɔäk	ɲɔäkkä	ka
bug	baan	baankä	ka
bump (bruise)	pōny	pōnykä	ka
butterfly	yaŋkuoθ	yaŋkuoθkä	ka
buttock	tat	taatkä	ka
camel	θorɔr	θorɔrkä	ka
cane	roany	roanykä	ka
centipede	närmuɔn	närmuɔnkä	ka
child	gat	gatkä	ka
color	biɛl	bielkä	ka
cookie	patpat	patpatkä	ka
cough	käk	käkkä	ka
cup	cuk	cukkä	ka
cup2	liɛr	liɛrkä	ka
cup3 (iron)	yiöm	yiömkä	ka
dream	läk	läkkä	ka
dung	wäär	wäärkä	ka
ear	jith	jithkä	ka
egret	bööŋ	bööŋkä	ka
erection	tät	tätkä	ka

fat/oil	liɛth	liɛthkä	ka
fiance	kuut	kuutkä	ka
finger	yiat	yiatkä	ka
flour (wheat)	bapɾo	bapɾokä	ka
flower	gaak	gaakkä	ka
fly	luanɟ	luanɟkä	ka
foot	pätciök	pätcökä	ka
friend	määth	määthkä	ka
gazelle	kɛw	kɛwkä	ka
goat	böw	böwkä	ka
goose	tuɔt	tuɔtkä	ka
grass	juac	juackä	ka
growl	ɲäär	ɲäärkä	ka
grunt	kuom	kuomkä	ka
hammer	puɔt	puɔtkä	ka
hand	pätet	pätetkä	ka
homosexual	koor	koorkä	ka
hoof	miɔt	miɔtkä	ka
hoof2	barkay	barkaykä	ka
horn (flute)	kaanɟ	kaanɟkä	ka
hyena	yak	yakkä	ka
injection	tuɔm	tuɔmkä	ka
itinerant	look	lookä	ka
knot (in tree)	tët	tëtkä	ka
leg	ciök	ciökä	ka
lung	puäth	puäthkä	ka
man	wut	wutkä	ka
monkey	gook	gookkä	ka
name	ciɔt	ciɔtkä	ka
narrows	mät	matkä	ka
nonsense3	dhok	dhokkä	ka
oxbow lake	lil	lilkä	ka
picture	thuure	thuurekä	ka
pillow	thäne	thänekä	ka
potato	tac	tackä	ka
prophet	gök	gökkä	ka
punch	piäm	piämkä	ka
rank 1	gatɔt	gatɔtkä	ka
rank 3	läm	lämkä	ka
ring	nyanyet	nyanyet	ka
ruler	keek	keekkä	ka
sept/oct	tɔt	tɔtkä	ka
September	laath	laathkä	ka
sheep	roam	roamkä	ka

shoe	war	warkä	ka
size	peek	pekä	ka
sky	puäär	puäärkä	ka
slap	pät	pätkä	ka
snail	cōm	cōmkä	ka
sneeze	thiam	thiamkä	ka
snot	thuny	thunykä	ka
spit	ruey	rueykä	ka
spit from cough	kiel	kielkä	ka
splash (anim)	guan	guanikä	ka
splash (big)	man	manikä	ka
splash (little)	cub	cubkä	ka
spoon2	guëk	guëkkä	ka
stone	döl	dölkä	ka
thief2	cuar	cuarkä	ka
thorn	kuook	kuookkä	ka
tray	pät	pätkä	ka
tree02/star	kuel	kuelkä	ka
tree03	thokiier	thokiierkä	ka
tree04	cuaydok	cuaydokkä	ka
tree09	riëk	riëkkä	ka
tree10	luor	luorkä	ka
tree11	kēc	këckä	ka
yawn	ṛaam	ṛaamkä	ka
leaf	jithjiath	jithkäjiath	-ka-
needle	libe	lipekä	ka/con1
millipede	kolkol	kolkolä	ka/con13
peace	mal	malä	ka/con13
umbilical cord	cāar	cāarä	ka/con13
mouse	bilduop	bilduopä	ka/con3
rank 2	kāar	kuāarkä	ka/di19
table	jōṇ	jīōṇkä	ka/di23
ash (dung)	puok	pukkä	ka/dim2
boo-boo	buot	butkä	ka/dim2
leopard	thōän	thōṇkä	ka/dim2
shirt	luot	lutkä	ka/dim2
skin	guop	gupkä	ka/dim2
tree01	koar	korkä	ka/dim2
magician	tiet	tītkä	ka/dim2*
sand/clay	liet	litkä	ka/dim2*
scab	goak	gokkä	ka/dim2*
tamarind	koat	kotkä	ka/dim2*
bark (dog)	guā	guikä	ka/pl11
valley	tāp	tapkä	ka/pl15*

tree14	buäw	buḡkā	ka/pl16/con3
childless widow	këë	keekä	ka/pl2
bag	gök	gḡkkä	ka/pl27
pail	tḡok	toktoḡkkä	ka/pl30/syll1
cat	nyaw	nyaawkä	ka/sl
nonsense2	thəluot	thəluotkä	ka/sl
pond	löl	löölkä	ka/sl
steamer	babur	babuurkä	ka/sl
thief	wān	wāḡnkä	ka/sl
ash (wood)	ḡëëth	ḡëthkä	ka/sl-
water plant	bḡḡr	bḡrkä	ka/sl-
ocean	bābdiit	bābdiitkä	ka/sl*
bone	cḡḡ	cḡḡrkä	ka/sl/b*
widow	këä	këëkä	ka/sl/dim2
firstborn	kāḡ	kāḡkkä	ka/sl/pl15
hunter/bow	bār	bāḡrkä	ka/sl/pl15
judge2	muukluk	muukä	ka/syll-
medicine	wāl	wāl	pl15
pig	diār	diār	pl15
body	puḡny	puāny	pl21*
elephant	guḡr	guār	pl22
knee	muḡl	muāl	pl22
husband	cḡw	cioa	pl23/di21/di3/con3
boy	dhöl	dhḡl	pl28
buffalo	mök	mḡk	pl28
dog	jiök	jiḡk	pl28
rat	kun	kḡn	pl32
dam	kek	këk	pl7
animal	ley	läḡ	pl8/con12
back	jök	jḡk	sing
bear	lēt	lēt	sing
belly	jic	jic	sing
blood	riəm	riəm	sing
conflict	ter	ter	sing
divinity	kuoth	kuoth	sing
end of milking	bëël	bëël	sing
eye	waḡ	waḡ	sing
face	nhiam	nhiam	sing
Feb/Mar/Apr	māy	māy	sing
fence	kal	kal	sing
food	kuān	kuān	sing
fruit	dojḡäth	dojḡäth	sing
fruit2	dowāl	dowāl	sing
giraffe	guc	guc	sing



girl	nyal	nyal	sing
life	tek	tek	sing
lion	lony	lony	sing
load	deth	deth	sing
marriage	kuën	kuën	sing
May/Jun/Jul	ruel	ruel	sing
mother	man	man	sing
navel	look	look	sing
nightmare	par	par	sing
Nov/Dec/Jan	jiom	jiom	sing
rank 4	bok	bok	sing
river	yieer	yieer	sing
shoulder	jiar	jiar	sing
sister	nyimar	nyimar	sing
tiger	kuac	kuac	sing
tooth	lec	lec	sing
tortoise	kuëët	kuëët	sing
tree05	dhuony	dhuony	sing
tree06	gok	gokkä	sing
tree07	mëth	mëth	sing
village	wec	wec	sing
vulture	kaat	kaat	sing
woman	ciek	ciek	sing
zebra	cotrial	cotrial	sing
barn	luak	luaak	sl
brother	gatmar	gatmaar	sl
brother2	domar	domaar	sl
bull1	thak	thaaak	sl
cow	yaŋ	yaan	sl
crocodile	nyan	nyaan	sl
dirt	tuäk	tuääk	sl
dish	tuok	tuook	sl
elbow	ciel	cieel	sl
fire/gun	mac	maac	sl
front of body	bap	baap	sl
guitar	thuom	thuoom	sl
heel	ɲulciök	ɲuulciök	sl
house	duel	dueel	sl
insignif. thing	ban	baan	sl
milk	cak	caak	sl
neck	ɲuäk	ɲuääk	sl
sun	cän	cään	sl
tree15	jiath	jiaath	sl
flag	bæer	ber	sl-

person	raan	ran	sl-
pot	dhaar	dhar	sl-
tree12	ṇueer	ṇuer	sl-
desert	pan	paan	sl*
bee	tuaar	tuar	sl-*
place	guääth	guäth	sl-*
goat2	dɛl	dëɛl	sl/b
bull2	tuut	tuṭt	sl-/b/di14
sea	kiir	kieer	sl-/di1
scorpion	jiith	jieth	sl-/di1*
windstorm	thul	thuṇṇl	sl/di14*
hole	puul	puṇl	sl-/di14*
necklace	tiik	tiëk	sl-/di2*
mosquito	nyiiṭh	nyieṭh	sl-/di5*
door	thiik	thiäk	sl-/di7
mountain	pām	paām	sl/pl15*
night	waar	wär	sl-/pl18
leader	kuar	kuäär	sl/pl18*
judge	kuāarluk	kuärluṭk	sl-/pl18/dim2

Genitive plural data is highlighted in Table 40. The columns are analogous to the ones in Table 39 above except that two asterisks are found on words where the genitive plural form seems to resemble the genitive singular more than other forms. The rightmost column, entitled *StemReg* contains an "x" if the word could alternatively be viewed as regular if the nominative singular were the input stem instead of the nominative plural.

**Table 42**  
**Genitive Plural**

English	nom s	nom pl	gen pl	gp ch	Stem Reg?
drum	bul	buṇl	buṇli	b/ni	
knot (in tree)	tët	təṭ	tëtṇi	b/ni*	x
hyena	yak	yaāk	yaakṇi	b-/pl18/ni*	
wind	jiṇm	joam	jiāmṇi	b/pl19/pl15/ni**	

shoulder	jiar	jiēr	jiari	b-/pl4/ni*	x
buttock	tat	tāt	taatni	b-/sl/ni**	
needle	libe	libeni	lipeni	con1	
plant	dɛy	dɛjuacni	dɛyni	con16/syll-*	x
bull1	thək	thääk	thään	con3/ni	
child	gat	gaat	gaan	con5	
song	dit	diit	diin	con5	
girl	nyal	nyiär	nyiät	con6	
water		piw	pieni	di5/ni/con-	??
door	thiik	thikni	thiakni	di7/ni**	
locust	koryom	koryomni	koryoamni	di8/ni**	
nonsense3	dhok	dhoäk	dhokni	dim2/ni*	x
fruit2	dowäl	dɛywal	dɛyniwal	-ka-	
bag	gök	göök	gökkä	ka/sl-	
coll. of things		ŋoak	ŋoakni	ni	??
money		kääŋ	kääŋni	ni	??
banana	bele	beleni	beleni	ni	x
bug	baan	baani	baani	ni	x
butterfly	yaŋkuoth	yaŋkuothni	yaŋkuothni	ni	x
cat	nyaw	nyawni	nyawni	ni	x
cookie	patpat	patpatni	patpatni	ni	x
elbow	ciel	cieli	cieli	ni	x
Feb/Mar/Apr	mäy	mäyni	mäyni	ni	x
fiance	kuut	kuutni	kuutni	ni	x
flag	bɛɛr	bəri	bəri/bɛɛri	ni	x
flower	gaak	gaakni	gaakni	ni	x
goat	böw	böwni	böwni	ni	x
goose	tuot	tuotni	tuotni	ni	x
growl	ŋäär	ŋääri	ŋääri	ni	x
guitar	thuom	thuomni	thuomni	ni	x
heel	ŋulciök	ŋulciökni	ŋulciökni	ni	x
hoof	miot	miotni	miotni	ni	x
horn (flute)	kaaŋ	kaaŋni	kaaŋni	ni	x
millipede	kolkol	kolkoli	kolkoli	ni	x
mouse	bilduop	bilduopni	bilduopni	ni	x
night	waar	waari	waari	ni	x
oxbow lake	lil	lili	lili	ni	x
picture	thuure	thuuren	thuuren	ni	x
pillow	thäne	thäneni	thäneni	ni	x
potato	tac	tacni	tacni	ni	x
rank 2	kaar	kaari	kaari	ni	x
ring	nyanyet	nyanyetni	nyanyetni	ni	x
ruler	keek	keekni	keekni	ni	x
sept/oct	tot	totni	totni	ni	x

spit	ruɛy	ruɛynɪ	ruɛynɪ	ni	x
splash (anim)	ɡuaŋ	ɡuaŋnɪ	ɡuaŋnɪ	ni	x
splash (big)	maŋ	maŋnɪ	maŋnɪ	ni	x
sun	cäŋ	cäŋnɪ	cäŋnɪ	ni	x
table	jöŋ	jöŋnɪ	jöŋnɪ	ni	x
tiger	kuac	kuacnɪ	kuacnɪ	ni	x
tree01	koar	koari	koari	ni	x
tree02/star	kuel	kueli	kueli	ni	x
tree03	thokiɛr	thokiɛri	thokiɛri	ni	x
tree04	cuaydɔk	cuaydɔknɪ	cuaydɔknɪ	ni	x
tree05	dhuɔny	dhuɔnyɪ	dhuɔnyɪ	ni	x
tree06	ɡɔk	ɡɔknɪ	ɡɔknɪ	ni	x
tree07	mëth	mëthnɪ	mëthnɪ	ni	x
tree08	ŋɔp	ŋɔpnɪ	ŋɔpnɪ	ni	x
tree09	riɛk	riɛknɪ	riɛknɪ	ni	x
tree10	luɔr	luɔri	luɔri	ni	x
umbilical cord	caar	caari	caari	ni	x
zebra	cɔtrial	cɔtriali	cɔtriali	ni	x
animal	ley	leey	leeyɪ	ni	
ant	ŋiɛc	ŋiɛc	ŋiɛcnɪ	ni	
arm (upper)	wuɔk	wuɔɔk	wuɔɔknɪ	ni	
arm from shoulder	tët	tet	tetnɪ	ni	
ash (wood)	ŋëëth	ŋeth	ŋethnɪ	ni	
back	jok	jiɔk	jiɔknɪ	ni	
bark (dog)	ɡua	ɡuiäni	ɡuiäni	ni	
bark (tree)/peel	kɔm	kɔɔm	kɔɔmnɪ	ni	
barn	luak	lueek	lueeknɪ	ni	
bean	ŋɔar	ŋɔaar	ŋɔaari	ni	
bear	lɛt	leet	leetnɪ	ni	
bee	tuaar	tuar	tuari	ni	
belly	jic	jiɪc	jiɪcnɪ	ni	
bird	dit	diit	diitnɪ	ni	
blood	riɛm	rim	rimnɪ	ni	
body	puɔny	puäny	puänyɪ	ni	
bone	cɔɣ	cɔɔɣ	cɔɔnɪ	ni	
boo-boo	buɔt	buɔɔt	buɔɔtnɪ	ni	
boy	dhöl	dhool	dhooli	ni	
branch	ŋɔäk	ŋɔääk	ŋɔääknɪ	ni	
brother	dɔmar	dɔmaari	dɔmaari	ni	
buffalo	mök	möök	mööknɪ	ni	
bull2	tuut	tut	tutnɪ	ni	
bump (bruise)	pɔny	pɔɔny	pɔɔnyɪ	ni	
camel	thorɔr	thorɔli	thorɔli	ni	
cane	roany	rony	ronyɪ	ni	

centipede	närmuṇ	näärmṇi	näärmṇi	ni	
chair	kom	koamni	koamni	ni	
chest	kaw	kəəth	kəəthni	ni	
childless widow	kəə	kəy	kəyni	ni	
chin	tik	tiik	tiikni	ni	
cloth	bii/biy	biāni	biāni	ni	
cloud/fog	tik	tiak	tiakni	ni	
color	biel	biēl	biēli	ni	
cotton	lath	laathni	laathni	ni	
crocodile	nyaṇ	nyāṇ	nyāṇni	ni	
cup	cuk	cuok	cuokni	ni	
cup2	lier	liāri	liāri	ni	
cup3 (iron)	yiom	yioom	yioomni	ni	
dam	kek	kēek	kēekni	ni	
desert	pan	paan	paani	ni	
dirt	tuak	tuak	tuakni	ni	
dirt2	mun	mōn	mōni	ni	
divinity	kuoth	kuuth	kuuthni	ni	
dung	wäär	wer	weri	ni	
egret	böön	boonni	boonni	ni	
erection	tät	tat	tatni	ni	
face	nhiam	nhiem	nhiemni	ni	
fat/oil	lieth	lith	lithni	ni	
fence	kal	kāl	kālī	ni	
filled hole	dīr	diār	diāri	ni	
finger	yiat	yiet	yietni	ni	
fire/gun	mac	māc	mācni	ni	
firstborn	kāy	kāy	kāyni	ni	
fish	rēc	rēc	rēcni	ni	
fly	luaṇ	luaaṇ	luaaṇni	ni	
foot	pätciök	pätciökni	pätciökni	ni	
friend	määth	māthni	māthni	ni	
front of body	bap	baapni	baapni	ni	
gazelle	kəw	kəw	kəwni	ni	
giraffe	guc	gueec	gueecni	ni	
gourd	guey	gueet	gueetni	ni	
hair	nhim	nhiām	nhiāmni	ni	
hand	pätet	pätetni	pätetni	ni	
head	wic	wiic	wiicni	ni	
heart	loc	lōc	lōcni	ni	
hippo	row	rööth	rööthni	ni	
hole	puul	puol	puoli	ni	
homosexual	koor	kōri	kōri	ni	
hoof2	barkay	barkayni	barkay	ni	

husband	c <u>ow</u>	co <u>ow</u>	coo <u>wni</u>	ni	
injection	tu <u>om</u>	tum	tum <u>ni</u>	ni	
insignif. thing	ba <u>ŋ</u>	baŋbaa <u>ŋni</u>	baŋbaa <u>ŋni</u>	ni	
itinerant	loo <u>k</u>	loa <u>kni</u>	loa <u>kni</u>	ni	
judge	ku <u>a</u> arluk	ku <u>ä</u> är	ku <u>ä</u> ri	ni	
judge2	muuklu <u>k</u>	mu <u>ok</u>	mu <u>okni</u>	ni	
judgement	lu <u>k</u>	lu <u>ok</u>	lu <u>okni</u>	ni	
knee	mu <u>l</u>	mu <u>äl</u>	mu <u>äli</u>	ni	
knife	ŋ <u>om</u>	ŋ <u>ä</u> mn <u>i</u>	ŋ <u>ä</u> mn <u>i</u>	ni	
leg	ci <u>ök</u>	cö <u>k</u>	cö <u>kni</u>	ni	
leopard	tho <u>än</u>	tho <u>on</u>	tho <u>oni</u>	ni	
lion	lony	luony	luony <u>ni</u>	ni	
lung	pu <u>ä</u> th	pu <u>oth</u>	pu <u>othni</u>	ni	
magician	ti <u>et</u>	ti <u>t</u>	ti <u>t</u> ni	ni	
man	wut	wun <u>i</u>	wun <u>i</u>	ni	
May/Jun/Jul	ruel	ru <u>el</u>	ru <u>el</u>	ni	
monkey	go <u>ok</u>	goa <u>kni</u>	goa <u>kni</u>	ni	
moon	pay	p <u>ä</u> th	p <u>ä</u> thni	ni	
mosquito	ny <u>i</u> ith	ny <u>i</u> ethni	ny <u>i</u> ethni	ni	
mother	man	ma <u>ni</u>	ma <u>ni</u>	ni	
mountain	p <u>ä</u> m	p <u>ä</u> äm	p <u>ä</u> ämni	ni	
mouth	tho <u>k</u>	thu <u>uk</u>	thu <u>ukni</u>	ni	
name	ci <u>ot</u>	ci <u>oot</u>	ci <u>ootni</u>	ni	
navel	lo <u>ok</u>	lo <u>k</u>	lo <u>kni</u>	ni	
neck	ŋu <u>äk</u>	ŋu <u>ak</u>	ŋu <u>akni</u>	ni	
necklace	ti <u>ik</u>	ti <u>ë</u> k	ti <u>ë</u> kni	ni	
nightmare	pa <u>r</u>	pa <u>ar</u>	pa <u>ari</u>	ni	
nonsense2	theluo <u>t</u>	theluo <u>otni</u>	theluo <u>otni</u>	ni	
nose	wum	wu <u>um</u>	wu <u>umni</u>	ni	
ocean	ba <u>b</u> dit	ba <u>b</u> diitni	ba <u>b</u> diitni	ni	
peace	mal	ma <u>l</u>	ma <u>li</u>	ni	
pig	di <u>är</u>	di <u>ari</u>	di <u>ari</u>	ni	
place	gu <u>ä</u> äth	gu <u>ä</u> th	gu <u>ä</u> thni	ni	
pond	löl	lo <u>li</u>	lo <u>li</u>	ni	
prophet	gö <u>k</u>	go <u>ok</u>	go <u>okni</u>	ni	
punch	pi <u>äm</u>	pi <u>a</u> am	pi <u>a</u> amni	ni	
rank 1	ga <u>t</u> ot	gaatuut <u>ni</u>	gaatuut <u>ni</u>	ni	
rat	kun	ku <u>on</u>	ku <u>oni</u>	ni	
river	yi <u>eer</u>	yi <u>er</u>	yi <u>eri</u>	ni	
sand/clay	li <u>et</u>	li <u>t</u>	li <u>t</u> ni	ni	
scab	go <u>ak</u>	gö <u>k</u>	gö <u>kni</u>	ni	
scorpion	ji <u>i</u> th	ji <u>i</u> eth	ji <u>i</u> ethni	ni	
sea	ki <u>ir</u>	ki <u>er</u>	ki <u>eri</u>	ni	
sheep	roam	ro <u>om</u>	ro <u>omni</u>	ni	

shirt	luṭ	luṭṭ	luṭṭni	ni	
shoe	war	wääri	wääri	ni	
sister	nyimar	nyiaṃari	nyiaṃari	ni	
size	peek	pek	pekni	ni	
skin	guṭp	guup	guupni	ni	
sky	puäär	puäri	puäri	ni	
snail	cṃm	ciöm	ciömni	ni	
snake	thṭl	thṭṭl	thṭṭli	ni	
snot	thuny	thuuny	thuunyni	ni	
sound	jow	jiṭh	jiṭhni	ni	
spit from cough	kiel	kiil	kiili	ni	
splash (little)	cub	cuṭb	cuṭbni	ni	
spoon	tuṇ	tuṇṇ	tuṇni	ni	
spoon2	guëk	guiik	guiikni	ni	
stone	döl	doṭl	doṭli	ni	
thief	wan	wään	wään	ni	
thief2	cuar	cueer	cueeri	ni	
tamarind	koat	kot	kotni	ni	
thorn	kuṭok	kuiy	kuiyni	ni	
tongue	lep	lëep	lëepni	ni	
tortoise	kuëët	kuet	kuetni	ni	
tray	pät	paat	paatni	ni	
tree11	këc	kεεc	kεεcni	ni	
tree12	ṇueer	ṇuër	ṇuëri	ni	
village	dhör	dhör	dhöri	ni	
village2	wec	wiiv	wiivni	ni	
vulture	kaat	kät	kätni	ni	
water plant	bṭṭr	bṭri	bṭri	ni	
widow	këä	key	keyni	ni	
windstorm	thul	thuṭl	thuṭli	ni	
yawn	ṇaam	ṇäm	ṇämni	ni	
Nov/Dec/Jan	jiṭm	jiam	jiṭmni	ni/b/pl16	x
cough	käk	kääk	kaakni	pl15/ni	
dream	läk	lääk	laakni	pl15/ni	
narrows	mät	mat	mätni	pl18/ni*	x
slap	pät	pat	pätni	pl18/ni*	x
hammer	puṭ	puṭni	puatni	pl22/ni	
rank 4	bok	bokni	bokni	pl23/ni	
dog	jiök	jiöök	jiöoni	pl28/ni	
ear	jiṭh	jiṭhni	jiṭhni	plur	x
conflicts	tër	tεer	tεer	plur	
fruit	dojiäth	deyjiën	deyjiën	plur	
leaf	jiṭhjiath	jiṭhjiën	jiṭhjiën	plur	
meat	riṇ	riiṇ	riiṇ	plur	

medicine	wäl	waal	waal	plur	
milk	cak	cak	cak	plur	
tooth	lec	lɛɛc	lɛɛc	plur	
woman	ciek	män	mään	sl	
basket	ʁöth	ʁöthni	ʁööthni	sl	
cow	yaŋ	ʁɔk	ʁɔɔk	sl	
food	kuän	kuan	kuaan	sl	
hunter/bow	bär	bəri	bəəri	sl	
pot	dhaar	dhəri	dhääri	sl	
rank 3	läm	lämni	läämni	sl	
steamer	babur	baburi	babuuri	sl	
tree15	jiath	jiɛn	jiɛɛn	sl	
person	raan	naath	nath	sl-	
breast	thɪn	thin	thiini	sl/b/ni	
September	laath	lěthni	laathni	sl/b-/pl10*	x
dish	tuok	tuok	tuooni	sl-/con3	
elephant	guor	guur	guəri	sl-/di12/ni**	
brother2	gatmar	gaatmar	gaatmaari	sl/ni	
eye	waŋ	wäŋ	wääŋni	sl/ni	
sneeze	thiam	thiem	thieemni	sl/ni	
tree13	thɔw	thɔäär	thɔəri	sl-/ni	
grass	juac	juaac	juacni	sl-/ni*	x
leader	kuar	kuär	kuääri	sl/ni**	
load	deth	deeth	dethni	sl-/ni**	x
marriage	kuën	kuëën	kuëni	sl-/ni**	x
tree14	buäw	bɔɔw	bɔäwni	sl-/ni/di11	
ash (dung)	puok	puuk	puokni	sl-/ni/di14	x
ingernail	riöp	rööp	riöpn	sl-/ni/di23*	x
goat2	dɛl	det	dëetni	sl/ni/pl7	
valley	täp	tap	tääpn	sl/pl18/ni	
pail	took	tookni	tɔktɔkn	sl-/pl30/syll**	
house	duel	duël	dueeli	sl/pl9/ni**	

In Table 43, locative singular data is highlighted and the columns are analogous to the ones above.



**Table 43**  
**Locative Singular**

English	nom sg	gen sg	loc sg	ls ch	StemR eg?
blood	riɛm	riɛm	riɛm	b	
Nov/Dec/Jan	jiɔm	jiɔm	jiɔm	b-/pl30	
tooth	lec	lec	läy	b-/pl8/con18	
oxbow lake	lil	lilkä	liɛl	di1/ka-	
tamarind	koat	kotkä	koatä	di8*	
mouth	thok	thuok	thok	dim1	
tree14	buäw	buɔkä	bɔwkä	dim1/con3	
sound	jow	jiath	joaw	dim1/di17/con17	
bean	ɲɔar	ɲɔarkä	ɲɔrkä	dim2	
lung	puäth	puäthkä	puhkä	dim2	
punch	piäm	piämkä	piṃkä	dim2	
eye	waɲ	waɲ	waɲkä	ka	y
heel	ɲulciök	ɲuulciök	ɲulciökä	ka	y
ring	nyanyet	nyanyet	nyanyetkä	ka	y
dish	tuok	tuook	tuookä	ka	
hair	nhim	nhim	nhimkä	ka	
nightmare	pär	pär	pärkä	ka	
bug	baan	baankä	baan	ka-	
butterfly	yaɲkuoth	yaɲkuothkä	yaɲkuoth	ka-	
fat/oil	lieth	liethkä	lieth	ka-	
growl	ɲäär	ɲäärkä	ɲäär	ka-	
injection	tuom	tuomkä	tuom	ka-	
potato	tac	tackä	tac	ka-	
shoe	war	warkä	war	ka-	
brother2	gatmar	gatmaar	gatkämaar	-ka-	
fruit	dojjiäth	dojjiäth	dokäjjiäth	-ka-	
locust	koryom	koryoam	koryiömkä	ka/b/pl23/dim2/di23	
life	tek	tek	tekä	ka/con13	y
knee	muɔl	muäl	muälä	ka/con13	
finger nail	riöp	röp	riöpkä	ka/di23	y
tree01	koar	korkä	koar	ka/di8	
camel	thorɔr	thorɔrkä	thorɔär	ka-/di9	
chin	tik	tiäk	tikkä	ka/dim2	y
head	wic	wiäc	wickä	ka/dim2	y
dung	wäär	wäärkä	wäär	ka-/pl15	
table	jöŋ	jiöŋkä	jiöŋ	ka/pl28	
dam	kek	käk	kekkä	ka/pl9	y
insignif. thing	baɲ	baaɲ	baɲkä	ka/sl-	y
monkey	gook	gookkä	goak	ka/sl-/di8	
judge	kuäärluk	kuärluok	kuäärlukä	ka/sl/dim2/pl15	y

thief2	cuar	cuarkä	cueer	ka/sl/pl17	
water plant	bɔ̃r	bɔ̃rkä	bɔ̃ärkä	ni/di11	
rank 3	läm	lämkä	lämkä	pl15	
dog	jiök	jiok	jiook	sl	
girl	nyal	nyal	nyaal	sl	
load	deth	deth	deeth	sl	
tree08	ɲɔ̃p	ɲɔ̃äp	ɲɔ̃äap	sl	
barn	luak	luaak	luak	sl-	
sky	puäär	puäärkä	puärä	sl-/con13	
arm (upper)	wuɔ̃k	wuɔ̃kkä	wuukä	sl/dim2	
elbow	ciel	cieel	cielä	sl/ka/con13	
pail	tɔ̃ok	tɔ̃ktɔ̃kä	tɔ̃okä	sl/pl24/syll-	y
judge2	muukluk	mukkä	muukäluɔ̃k	syll	
bark (tree)/peel	kɔ̃m	kɔ̃mkä	kɔ̃mkä	gs	y
basket	röth	röthkä	röthkä	gs	y
branch	ɲɔ̃äk	ɲɔ̃äkkä	ɲɔ̃äkkä	gs	y
bump (bruise)	pɔ̃ny	pɔ̃nykä	pɔ̃nykä	gs	y
cane	roany	roanykä	roanykä	gs	y
centipede	närmuɔ̃n	närmuɔ̃nkä	närmuɔ̃nkä	gs	y
child	gat	gatkä	gatkä	gs	y
color	biel	bielkä	bielkä	gs	y
cookie	patpat	patpatkä	patpatkä	gs	y
cough	käk	käkkä	käkkä	gs	y
cup	cuk	cukkä	cukkä	gs	y
cup2	lier	lierkä	lierkä	gs	y
cup3 (iron)	yᵢöm	yᵢömkä	yᵢömkä	gs	y
dream	läk	läkkä	läkkä	gs	y
ear	jᵢth	jᵢthkä	jᵢthkä	gs	y
egret	böön	böönkä	böönkä	gs	y
erection	tät	tätkä	tätkä	gs	y
fiance	kuut	kuutkä	kuutkä	gs	y
finger	yiat	yiatkä	yiatkä	gs	y
flour (wheat)	bapro	baprokä	baprokä	gs	y
flower	gaak	gaakkä	gaakkä	gs	y
fly	luan	luanikä	luanikä	gs	y
friend	määth	määthkä	määthkä	gs	y
gazelle	kew	kewkä	kewkä	gs	y
goat	böw	böwkä	böwkä	gs	y
goose	tuɔ̃t	tuɔ̃tkä	tuɔ̃tkä	gs	y
grass	juac	juackä	juackä	gs	y
grunt	kuom	kuomkä	kuomkä	gs	y
hammer	puɔ̃t	puɔ̃tkä	puɔ̃tkä	gs	y
hand2	pätet	pätetkä	pätetkä	gs	y
homosexual	kɔ̃or	kɔ̃orkä	kɔ̃orkä	gs	y

hoof	barkav	barkavkä	barkavkä	gs	y
hoof	miɔt	miɔtkä	miɔtkä	gs	y
horn (flute)	kaaŋ	kaaŋkä	kaaŋkä	gs	y
hyena	yak	yakkä	yakkä	gs	y
itinerant	look	lookä	lookä	gs	y
knot (in tree)	tät	tätkä	tätkä	gs	y
leg	ciök	ciökä	ciökä	gs	y
man	wut	wutkä	wutkä	gs	y
name	ciɔt	ciɔtkä	ciɔtkä	gs	y
nonsense3	dhok	dhokkä	dhokkä	gs	y
picture	thuure	thuurekä	thuurekä	gs	y
pillow	thäne	thänekä	thänekä	gs	y
prophet	gök	gökkä	gökkä	gs	y
rank 1	gatɔt	gatɔtkä	gatɔtkä	gs	y
ruler	keek	keekkä	keekkä	gs	y
sept/oct	tɔt	tɔtkä	tɔtkä	gs	y
September	laath	laathkä	laathkä	gs	y
sheep	roam	roamkä	roamkä	gs	y
size	peek	peekä	peekä	gs	y
slap	pät	pätkä	pätkä	gs	y
snail	cɔm	cɔmkä	cɔmkä	gs	y
sneeze	thiam	thiamkä	thiamkä	gs	y
snot	thuny	thunykä	thunykä	gs	y
spit	ruɛy	ruɛykä	ruɛykä	gs	y
spit from cough	kiɛl	kiɛlkä	kiɛlkä	gs	y
splash (anim)	guaŋ	guaŋkä	guaŋkä	gs	y
splash (big)	maŋ	maŋkä	maŋkä	gs	y
splash (little)	cub	cubkä	cubkä	gs	y
spoon2	guëk	guëkkä	guëkkä	gs	y
stone	döl	dölkä	dölkä	gs	y
thorn	kuɔok	kuɔokkä	kuɔokkä	gs	y
tray	pät	pätkä	pätkä	gs	y
tree02/star	kuel	kuelkä	kuelkä	gs	y
tree03	thokiɛr	thokiɛrkä	thokiɛrkä	gs	y
tree04	cuaydɔk	cuaydɔkkä	cuaydɔkkä	gs	y
tree06	gɔk	gɔkkä	gɔkkä	gs	y
tree09	riëk	riëkkä	riëkkä	gs	y
tree10	luɔr	luɔrkä	luɔrkä	gs	y
tree11	këc	këckä	këckä	gs	y
yawn	ŋaam	ŋaamkä	ŋaamkä	gs	y
ant	ŋiɛc	ŋiɛckä	ŋiɛckä	gs	y
arm from shoulder	tët	tëtkä	tëtkä	gs	y

bad blood	nueer	nueerkä	nueerkä	gs	y
banana	bele	belekä	belekä	gs	y
animal	ley	läv	läv	gs	
ash (dung)	puṓk	pukkä	pukkä	gs	
ash (wood)	ṇēēth	ṇēthkă	ṇēthkă	gs	
back	jok	jok	jok	gs	
bag	gök	gṓkkä	gṓkkä	gs	
bark (dog)	guṗ	guḱkä	guḱkä	gs	
bear	let	let	let	gs	
bee	tuaar	tuar	tuar	gs	
belly	jic	jic	jic	gs	
bird	dit	diet	diet	gs	
body	puṓny	puăny	puăny	gs	
bone	cov	cṓṓrkă	cṓṓrkă	gs	
boo-boo	buṓt	butkä	butkä	gs	
boy	dhöl	dhṓl	dhṓl	gs	
breast	thḱn	thḱăn	thḱăn	gs	
brother	domar	domaar	domaar	gs	
buffalo	mök	mṓk	mṓk	gs	
bull1	thḱk	thḱḱk	thḱḱk	gs	
bull2	tuut	tuṓt	tuṓt	gs	
buttock	tat	taatkä	taatkä	gs	
cat	nyaw	nyaawkă	nyaawkă	gs	
chair	kom	koam	koam	gs	
chest	kaw	kath	kath	gs	
childless widow	kēē	keekă	keekă	gs	
cloth	bḱḱ/bḱy	bḱey	bḱey	gs	
cloud/fog	tḱk	tiḱk	tiḱk	gs	
conflict	tēr	tēr	tēr	gs	
cotton	lath	lath	lath	gs	
cow	yaṗ	yaan	yaan	gs	
crocodile	nyaṗ	nyaan	nyaan	gs	
desert	pan	paan	paan	gs	
dirt	tuāk	tuăāk	tuăāk	gs	
dirt2	mun	muṓṓn	muṓṓn	gs	
divinity	kuoth	kuoth	kuoth	gs	
door	thḱḱk	thḱḱk	thḱḱk	gs	
drum	bul	buṓṓl	buṓṓl	gs	
elephant	guor	guar	guar	gs	
end of milking	bēēl	bēēl	bēēl	gs	
face	nhiam	nhiam	nhiam	gs	
Feb/Mar/Apr	măy	măy	măy	gs	
fence	kal	kal	kal	gs	

filled hole	d̥ir	d̥iar	d̥iar	gs	
fire/gun	mac	maac	maac	gs	
firstborn	k̥äy	k̥ḁakkä	k̥ḁakkä	gs	
fish	r̥ec	r̥äc	r̥äc	gs	
flag	b̥e̥er	b̥er	b̥er	gs	
food	kuän	kuän	kuän	gs	
foot	pätciök	pätcokä	pätcokä	gs	
front of body	bap	baap	baap	gs	
fruit2	dowäl	dowäl	dowäl	gs	
giraffe	guc	guc	guc	gs	
goat2	d̥el	d̥ē̄l	d̥ē̄l	gs	
gourd	gucy	gueth	gueth	gs	
guitar	thuom	thuoom	thuoom	gs	
heart	loc	loac	loac	gs	
hippo	row	roa	roa	gs	
hole	puul	puol	puol	gs	
house	duel	dueel	dueel	gs	
hunter/bow	b̥är	b̥ḁarkä	b̥ḁarkä	gs	
husband	c̥ow	c̥ioa	c̥ioa	gs	
knife	ŋ̥om	ŋ̥äm	ŋ̥äm	gs	
leader	ku̥ar	kuäǟr	kuäǟr	gs	
leaf	j̥i̥thjiath	j̥i̥thkäjiath	j̥i̥thkäjiath	gs	
leopard	thoän	th̥onkä	th̥onkä	gs	
lion	lony	lony	lony	gs	
magician	t̥iet	t̥itkä	t̥itkä	gs	
marriage	kuën	kuën	kuën	gs	
May/June/July	ruel	ruel	ruel	gs	
meat	ri̥ŋ	ri̥äŋ	ri̥äŋ	gs	
medicine	wäl	w̥äl	w̥äl	gs	
milk	cak	caak	caak	gs	
millipede	kolkol	kolkolä	kolkolä	gs	
moon	pay	path	path	gs	
mosquito	ny̥i̥th	ny̥ieth	ny̥ieth	gs	
mother	man	man	man	gs	
mountain	pām	p̥ḁam	p̥ḁam	gs	
mouse	bilduop	bilduopä	bilduopä	gs	
narrows	mät	m̥atkä	m̥atkä	gs	
navel	look	look	look	gs	
neck	ŋuäk	ŋuäǟk	ŋuäǟk	gs	
necklace	tiik	ti̥ek	ti̥ek	gs	
needle	libe	lip̥ekä	lip̥ekä	gs	
night	w̥ḁar	w̥är	w̥är	gs	
nonsense2	th̥eluo̥t	th̥eluo̥tkä	th̥eluo̥tkä	gs	
nose	wum	wu̥om	wu̥om	gs	

ocean	ḡābdiṭ	ḡābdiitkā	ḡābdiitkā	gs	
peace	mal	malä	malä	gs	
person	raan	ran	ran	gs	
pig	diär	diär	diär	gs	
place	guääth	guäth	guäth	gs	
plant	dēy	doa	doa	gs	
pond	löl	löölkä	löölkä	gs	
pot	dhaar	dhar	dhar	gs	
rank 2	kaār	kuāarkä	kuāarkä	gs	
rank 4	bok	bok	bok	gs	
rat	kun	kōn	kōn	gs	
river	yieer	yieer	yieer	gs	
sand/clay	liet	litkā	litkā	gs	
scab	goak	gokkā	gokkā	gs	
scorpion	jiith	jieth	jieth	gs	
sea	kiir	kieer	kieer	gs	
shirt	luṭ	lutkā	lutkā	gs	
shoulder	jiar	jiar	jiar	gs	
sister	nyimar	nyimar	nyimar	gs	
skin	guṭp	gupkā	gupkā	gs	
snake	thṭl	thṭäl	thṭäl	gs	
song	dit	diēt	diēt	gs	
spoon	tuṭ	tuṭṭṭ	tuṭṭṭ	gs	
steamer	babur	babuurkā	babuurkā	gs	
sun	cāṭ	cääṭ	cääṭ	gs	
thief	wān	wāankä	wāankä	gs	
tiger	kuac	kuac	kuac	gs	
tongue	lēp	lēp	lēp	gs	
tortoise	kuēēt	kuēēt	kuēēt	gs	
tree05	dhuony	dhuony	dhuony	gs	
tree07	mēth	mēth	mēth	gs	
tree12	ṇueer	ṇuer	ṇuer	gs	
tree13	thṭw	thṭä	thṭä	gs	
tree15	jiath	jiaath	jiaath	gs	
umbilical cord	caār	caārä	caārä	gs	
valley	tāp	tapkā	tapkā	gs	
village	dhōr	dhōar	dhōar	gs	
village	wec	wec	wec	gs	
vulture	kaāt	kaāt	kaāt	gs	
widow	kēä	kēēkä	kēēkä	gs	
wind	jiṭm	jiām	jiām	gs	
windstorm	thul	thuṭṭl	thuṭṭl	gs	
woman	ciek	ciek	ciek	gs	
zebra	cṭtrial	cṭtrial	cṭtrial	gs	

Locative Plural data is highlighted in Table 44. The columns are analogous to the ones in the tables above.

**Table 44**  
**Locative Plural**

English	nom sg	gen pl	loc pl	lp ch	StemReg ?
childless widow	këë	kɛynɪ	këynɪ	b	
buttock	tat	taatnɪ	təatnɪ	b/pl15	
desert	pan	paanɪ	pəanɪ	b/pl15	
front of body	bap	baapnɪ	bəapnɪ	b/pl15	
cotton	lath	laathnɪ	ləathnɪ	b-/pl18	
child	gat	gaan	gaat	con19	
water plant	bɔɔr	bɔri	bɔəri	dil1	
table	jɔŋ	jɔŋnɪ	jɪɔŋnɪ	di23/pl28	
banana	bɛle	bɛlenɪ	bɛlenɪ	gp	Y
bug	baan	baanɪ	baanɪ	gp	Y
cat	nyaw	nyawnɪ	nyawnɪ	gp	Y
cookie	patpat	patpatnɪ	patpatnɪ	gp	Y
ear	jɪth	jɪthnɪ	jɪthnɪ	gp	Y
elbow	ciɛl	ciɛlɪ	ciɛlɪ	gp	Y
Feb/Mar/Apr	mäy	mäynɪ	mäynɪ	gp	Y
fiance	kuut	kuutnɪ	kuutnɪ	gp	Y
finger nail	riöp	riöpni	riöpni	gp	Y
flower	gaak	gaakni	gaakni	gp	Y
goose	tuɔt	tuɔtnɪ	tuɔtnɪ	gp	Y
grass	juac	juacnɪ	juacnɪ	gp	Y
growl	ŋäär	ŋääri	ŋääri	gp	Y
guitar	thuom	thuomnɪ	thuomnɪ	gp	Y
hand2	pätet	pätetnɪ	pätetnɪ	gp	Y
heel	ŋulciök	ŋulciökni	ŋulciökni	gp	Y
hoof	miɔt	miɔtnɪ	miɔtnɪ	gp	Y
horn (flute)	kaaŋ	kaaŋnɪ	kaaŋnɪ	gp	Y
knot (in tree)	tët	tëttnɪ	tëttnɪ	gp	Y
marriage	kuën	kuëni	kuëni	gp	Y
millipede	kolkol	kolkolɪ	kolkolɪ	gp	Y
mother	man	manɪ	manɪ	gp	Y
mouse	bilduɔp	bilduɔpnɪ	bilduɔpnɪ	gp	Y
narrows	mät	mättnɪ	mättnɪ	gp	Y
nonsense3	dhok	dhokni	dhokni	gp	Y
oxbow lake	lil	lilɪ	lilɪ	gp	Y
peace	mal	malɪ	malɪ	gp	Y
picture	thuure	thuurenɪ	thuurenɪ	gp	Y

pillow	thānc	thāneni	thāneni	gp	y
plant	dɛy	dɛyni	dɛyni	gp	y
potato	tac	tacni	tacni	gp	y
rank 2	kāar	kāari	kāari	gp	y
rank 4	bok	bokni	bokni	gp	y
ring	nyanyet	nyanyetni	nyanyetni	gp	y
ruler	keek	keekni	keekni	gp	y
sept/oct	tɔt	tɔtni	tɔtni	gp	y
September	laath	laathni	laathni	gp	y
shoulder	jiar	jiari	jiari	gp	y
slap	pāt	pātni	pātni	gp	y
spit	ruɛy	ruɛyni	ruɛyni	gp	y
splash (anim)	guan	guan̄ni	guan̄ni	gp	y
splash (big)	man	man̄ni	man̄ni	gp	y
tiger	kuac	kuacni	kuacni	gp	y
tree02/star	kuel	kueli	kueli	gp	y
tree03	thokier	thokieri	thokieri	gp	y
tree04	cuaydok	cuaydokni	cuaydokni	gp	y
tree05	dhuony	dhuonyni	dhuonyni	gp	y
tree06	gɔk	gɔkni	gɔkni	gp	y
tree07	mēth	mēthni	mēthni	gp	y
tree08	ŋɔp	ŋɔpni	ŋɔpni	gp	y
tree09	riēk	riēkni	riēkni	gp	y
tree10	luɔr	luɔri	luɔri	gp	y
zebra	cɔtrial	cɔtriali	cɔtriali	gp	y
coll. of things		ŋɔakni	ŋɔakni	gp	??
money		kääŋni	kääŋni	gp	??
person	raan	nath	nath	gp	
water		pieni	pieni	gp	??
woman	ciek	mään	mään	gp	
animal	ley	leeyni	leeyni	gp	
ant	ŋiec	ŋiicni	ŋiicni	gp	
arm (upper)	wuɔk	wuɔkni	wuɔkni	gp	
arm from shoulder	tēt	tetni	tetni	gp	
ash (wood)	ŋēth	ŋethni	ŋethni	gp	
back	jok	jiokni	jiokni	gp	
bark (dog)	gua	guiāni	guiāni	gp	
bark (tree)/peel	kɔm	kɔomni	kɔomni	gp	
basket	xōth	xōōthni	xōōthni	gp	
bean	ŋɔar	ŋɔaari	ŋɔaari	gp	
bear	lɛt	leetni	leetni	gp	
bee	tuaar	tuari	tuari	gp	
belly	jic	jiicni	jiicni	gp	
bird	dit	diitni	diitni	gp	



blood	riem	rimni	rimni	gp	
body	puony	puänyni	puänyni	gp	
bone	cov	cöoni	cöoni	gp	
boo-boo	buot	buöotni	buöotni	gp	
boy	dhöl	dhöoli	dhöoli	gp	
branch	nöäk	nöääkni	nöääkni	gp	
breast	thün	thiini	thiini	gp	
brother	domar	domaari	domaari	gp	
brother2	gatmar	gaatmaari	gaatmaari	gp	
bull1	thäk	thääni	thääni	gp	
bull2	tuut	tutni	tutni	gp	
bump (bruise)	pony	poöyni	poöyni	gp	
camel	thoror	thoröli	thoröli	gp	
centipede	närmuon	näärmöni	näärmöni	gp	
chair	kom	koamni	koamni	gp	
chin	tik	tiikni	tiikni	gp	
cloth	biï/biy	biäni	biäni	gp	
cloud/fog	tik	tiäkni	tiäkni	gp	
color	biel	biieli	biieli	gp	
conflict	ter	tээр	teer	gp	
cough	käk	kaäkni	kaäkni	gp	
cow	yaŋ	ɣöök	ɣöök	gp	
crocodile	nyaŋ	nyäŋni	nyäŋni	gp	
cup	cuk	cuökni	cuökni	gp	
cup2	lier	liäri	liäri	gp	
cup3 (iron)	yiöm	yiöömni	yiöömni	gp	
dam	kek	këekni	këekni	gp	
dirt	tuäk	tuäkni	tuäkni	gp	
dirt2	mun	möni	möni	gp	
dish	tuok	tuooni	tuooni	gp	
divinity	kuoth	kuuthni	kuuthni	gp	
dog	jiök	jiööni	jiööni	gp	
door	thiik	thiäkni	thiäkni	gp	
dream	läk	laäkni	laäkni	gp	
drum	bul	buöli	buöli	gp	
egret	bööŋ	boöŋni	boöŋni	gp	
elephant	guor	guari	guari	gp	
erection	tät	tätni	tätni	gp	
eye	waŋ	wääŋni	wääŋni	gp	
face	nhiam	nhiemni	nhiemni	gp	
fat/oil	lieth	lithni	lithni	gp	
fence	kal	käli	käli	gp	
filled hole	dir	diäri	diäri	gp	
finger	yiät	yietni	yietni	gp	

fire/gun	mac	mäcni	mäcni	gp	
firstborn	käy	käyni	käyni	gp	
flag	bæer	bëri/bæeri	bëri	gp	
fly	luaŋ	luaaŋni	luaaŋni	gp	
food	kuän	kuaan	kuaan	gp	
foot	pätciök	pätcokni	pätcokni	gp	
friend	määth	mäthni	mäthni	gp	
gazelle	kew	kæewni	kæewni	gp	
giraffe	guc	gueecni	gueecni	gp	
girl	nyal	nyiät	nyiät	gp	
gourd	guy	gueetni	gueetni	gp	
hair	nhim	nhiämn	nhiämn	gp	
hammer	puot	puatni	puatni	gp	
head	wic	wiicni	wiicni	gp	
heart	loc	löcni	löcni	gp	
hole	puul	puoli	puoli	gp	
homosexual	koor	kori	kori	gp	
house	duel	dueeli	dueeli	gp	
hunter/bow	bär	baari	baari	gp	
husband	cw	coowni	coowni	gp	
hyena	yak	yaakni	yaakni	gp	
injection	tuom	tumni	tumni	gp	
insignif. thing	baŋ	baŋbaaŋni	baŋbaaŋni	gp	
judge	kuarlu	kuari	kuari	gp	
knee	muol	muäli	muäli	gp	
knife	ŋom	ŋöämn	ŋöämn	gp	
leader	kuar	kuääri	kuääri	gp	
leg	ciök	cökn	cökn	gp	
leopard	thoän	thöoni	thöoni	gp	
locust	koryom	koryöamni	koryöamni	gp	
lung	puäth	puöthni	puöthni	gp	
magician	tiet	titni	titni	gp	
man	wut	wuni	wuni	gp	
meat	riŋ	riiŋ	riiŋ	gp	
medicine	wäl	waal	waal	gp	
moon	pay	päthni	päthni	gp	
mosquito	nyiith	nyiethni	nyiethni	gp	
mouth	thok	thuukni	thuukni	gp	
name	ciot	ciöotni	ciöotni	gp	
neck	ŋuäk	ŋuakni	ŋuakni	gp	
necklace	tiik	tiëkn	tiëkn	gp	
needle	libe	lipeni	lipeni	gp	
night	waar	waari	waari	gp	
nightmare	par	paari	paari	gp	

nonsense2	theluoṭ	theluoṭni	theluoṭni	gp	
nose	wum	wuumni	wuumni	gp	
ocean	bābdiṭ	bābdiitni	bābdiitni	gp	
place	guääṭh	guäthni	guäthni	gp	
pond	löl	loli	loli	gp	
pot	dhaar	dhääri	dhääri	gp	
prophet	gök	gookni	gookni	gp	
punch	piām	piāamni	piāamni	gp	
rank 1	gatṭ	gaatuutni	gaatuutni	gp	
rat	kun	kuṇni	kuṇni	gp	
river	yieer	yiēri	yiēri	gp	
sand/clay	list	litni	litni	gp	
scab	goak	gokni	gokni	gp	
scorpion	jiith	jiethni	jiethni	gp	
sea	kiir	kiēri	kiēri	gp	
sheep	roam	roomni	roomni	gp	
shirt	luṭ	luṭṭni	luṭṭni	gp	
shoe	war	wääri	wääri	gp	
sister	nyimar	nyiāmarī	nyiāmarī	gp	
skin	guṭp	guupni	guupni	gp	
sky	puäär	puāri	puāri	gp	
snail	cōm	ciōmni	ciōmni	gp	
snake	thṭl	thṭli	thṭli	gp	
sneeze	thiam	thieemni	thieemni	gp	
snot	thuny	thuunyni	thuunyni	gp	
sound	jow	jiṭhni	jiṭhni	gp	
splash (little)	cub	cuṭbni	cuṭbni	gp	
spoon	tuṇ	tuṇni	tuṇni	gp	
spoon2	guēk	guiikni	guiikni	gp	
steamer	babur	babuuri	babuuri	gp	
stone	döl	dōoli	dōoli	gp	
tamarind	koat	kotni	kotni	gp	
thief2	cuar	cueeri	cueeri	gp	
thorn	kuṭok	kuiyni	kuiyni	gp	
tongue	lep	lëepni	lëepni	gp	
tray	pāt	pāatni	pāatni	gp	
tree12	ṇueer	ṇuēri	ṇuēri	gp	
tree13	thṭw	thṭāri	thṭāri	gp	
tree14	buāw	bṭāwni	bṭāwni	gp	
tree15	jiath	jiēen	jiēen	gp	
village	dhor	dhōri	dhōri	gp	
village	wec	wiṭyni	wiṭyni	gp	
vulture	kaāt	kaṭni	kaṭni	gp	
widow	kää	keyni	keyni	gp	

wind	j <sub>i</sub> om	j <sub>i</sub> amni	j <sub>i</sub> amni	gp	
windstorm	thul	thu <sub>o</sub> li	thu <sub>o</sub> li	gp	
yawn	ŋaam	ŋämni	ŋämni	gp	
hoof	barkay	barkay	barkayni	ni	y
May/June/July	ruel	ruël	ruëli	ni	
milk	cak	cak	cakni	ni	
thief	wan	wään	wäänni	ni	
fish	rɛc	rɛɛcni	rɛɛc	ni-	
lion	lony	luonymi	luony	ni-	
tree11	kēc	kɛɛcni	kɛɛc	ni-	
fruit	doj <sub>i</sub> äth	dɛyjien	dɛynijien	-ni-	
leaf	j <sub>i</sub> thjiath	j <sub>i</sub> thjien	j <sub>i</sub> thnijien	-ni-	
fruit2	dowäl	dɛyniwal	dɛywal	-ni--	
Nov/Dec/Jan	j <sub>i</sub> om	j <sub>i</sub> omni	jiam	ni-/b/pl21	
song	dit	diin	diitni	ni/con19	
dung	wäär	weri	wär	ni-/pl8	
barn	luak	lueekni	luaak	ni-/pl8*	
goat2	dɛl	dëetni	deet	ni-/pl9	
mountain	päm	päämni	päämni	pl15	
umbilical cord	caar	caari	cääri	pl18	
butterfly	yan <sub>ku</sub> oth	yan <sub>ku</sub> othni	yan <sub>ku</sub> othni	pl23	
hippo	row	rööthni	roöthni	pl28	
navel	look	lokni	lookni	sl	y
size	peek	pekni	peekni	sl	y
goat	böw	böwni	bööwni	sl	
load	deth	dethni	deethni	sl	
monkey	gook	goakni	goakni	sl	
pail	took	tōktōkni	tōktōkni	sl	
pig	diär	diari	diääri	sl	
sun	cäng	cängni	cäängni	sl	
tree01	koar	koari	koaari	sl	
chest	kaw	kaathni	kathni	sl-	
tooth	lec	lɛɛc	lec	sl-	
itinerant	look	loakni	lookni	sl/b/dim1/pl24	
spit from cough	kiel	kiili	kieli	sl-/di1	y
ash (dung)	puok	puokni	puukni	sl/dim2/ni*	
cane	roany	rōyni	roony	sl/ni-	
tortoise	kuëët	kuetni	kuëët	sl/ni/b	
rank 3	läm	läämni	lämni	sl-/pl15	
valley	täp	tääpni	tapni	sl-/pl15/ni*	
buffalo	mök	möökn	mōkn	sl-/pl28	
bag	gök	gökkä	gōokni	sl/pl28/ni	
judge2	muukluk	muokni	muokni <sub>luk</sub>	syll	

In Table 43, the individual form classes determined in the following Table 44 are listed side by side and numbered by discrete consecutive series of individual form classes (this table precedes Table 44 for formatting reasons). There is an "x" in the *lmem* column if it is the only entry for that sequence of form classes.

**Table 45**  
**Number of Declension Classes**

English	nom sg	np#	gs#	gp#	ls#	lp#	Total	lmem
buttock	tat	1	21	5	35	2	1	x
eye	waŋ	1	49	31	10	31	2	x
crocodile	nyaŋ	1	50	17	35	31	3	
fire/gun	mac	1	50	17	35	31	3	
breast	thiŋ	2	16	27	35	31	4	x
knot (in tree)	tët	2	21	1	35	31	5	x
food	kuän	2	49	25	35	31	6	x
moon	pay	3	5	17	35	31	7	x
girl	nyal	4	49	10	28	31	8	x
leg	ciök	5	21	17	35	31	9	x
widow	këä	6	38	17	35	31	10	x
shoulder	jiar	7	49	4	35	31	11	x
leaf	jithjiath	8	22	24	35	9	12	x
sneeze	thiam	9	21	31	35	31	13	x
face	nhiam	9	49	17	35	31	14	x
fence	kal	10	49	17	35	31	15	x
milk	cak	10	50	24	35	7	16	x
chest	kaw	11	6	17	35	20	17	x
fruit2	dowäl	12	49	15	35	10	18	x
fruit	dojiäth	13	49	24	12	9	19	x
Nov/Dec/Jan	jiom	14	49	18	2	11	20	x
heart	loc	15	18	17	35	31	21	
village	dhor	15	18	17	35	31	21	
firstborn	käx	16	39	17	35	31	22	x
place/time	göä	17					23	x
drum	bul	18	10	1	35	31	24	x
spoon	tuŋ	18	10	17	35	31	25	x
cup	cuk	19	21	17	35	31	26	

splash (little)	cub	19	21	17	35	31	26	
rat	kun	19	46	17	35	31	27	x
windstorm	thul	19	55	17	35	31	28	x
lion	lony	20	49	17	35	8	29	x
snail	com	21	21	17	35	31	30	x
back	jok	22	49	17	35	31	31	x
sound	jow	23	12	17	8	31	32	x
hair	nhim	24	1	17	10	31	33	x
filled hole	dir	25	17	17	35	31	34	x
cloud/fog	tik	26	17	17	35	31	35	x
sister	nyimar	26	49	17	35	31	36	x
nonsense3	dhok	27	21	14	35	31	37	x
wind	jiom	28	3	3	35	31	38	x
cane	roany	29	21	17	35	24	39	x
fat/oil	lieth	29	21	17	11	31	40	
injection	tuom	29	21	17	11	31	40	
tamarind	koat	29	28	17	5	31	41	x
magician	tiet	29	28	17	35	31	42	
sand/clay	liet	29	28	17	35	31	42	
scab	goak	29	28	17	35	31	42	
blood	riem	29	49	17	1	31	43	x
bad blood	nueer	30	21		35		44	
flour (wheat)	bapro	30	21		35		44	
grunt	kuom	30	21		35		44	
bark (dog)	gua	30	29	17	35	31	45	x
water plant	bop	30	36	17	26	5	46	x
life	tek	30	49		14		48	x
end of milking	bæl	30	49		35		47	x
water		31		11		31	49	
coll. of things		31		17		31	49	
money		31		17		31	49	
tree08	pop	32	8	17	28	31	50	x
locust	koryom	32	18	13	13	31	51	x
oxbow lake	lil	32	21	17	4	31	52	x
ring	nyanyet	32	21	17	10	31	53	x
butterfly	yankuoth	32	21	17	11	17	54	x
bug	baan	32	21	17	11	31	55	
growl	qaär	32	21	17	11	31	55	
potato	tac	32	21	17	11	31	55	
camel	thoror	32	21	17	17	31	56	x
sky	puäär	32	21	17	30	31	57	x
hoof	barkay	32	21	17	35	7	58	x
goat	böw	32	21	17	35	19	59	x
banana	bæle	32	21	17	35	31	60	

cookie	patpat	32	21	17	35	31	60	
fiance	kuut	32	21	17	35	31	60	
flower	gaak	32	21	17	35	31	60	
foot	pätciök	32	21	17	35	31	60	
goose	tuot	32	21	17	35	31	60	
hand	pätet	32	21	17	35	31	60	
hoof	miot	32	21	17	35	31	60	
horn (flute)	kaan	32	21	17	35	31	60	
picture	thuure	32	21	17	35	31	60	
pillow	thäne	32	21	17	35	31	60	
rank 1	gatot	32	21	17	35	31	60	
ruler	keek	32	21	17	35	31	60	
sept/oct	tot	32	21	17	35	31	60	
spit	ruey	32	21	17	35	31	60	
splash (anim)	guan	32	21	17	35	31	60	
splash (big)	man	32	21	17	35	31	60	
tree02/star	kuel	32	21	17	35	31	60	
tree03	thokier	32	21	17	35	31	60	
tree04	cuaydok	32	21	17	35	31	60	
tree09	riëk	32	21	17	35	31	60	
tree10	luor	32	21	17	35	31	60	
hammer	puot	32	21	21	35	31	61	x
ear	jith	32	21	24	35	31	62	x
rank 3	läm	32	21	25	27	26	64	x
basket	voth	32	21	25	35	31	63	x
needle	libe	32	23	6	35	31	65	x
umbilical cord	caar	32	24	17	35	16	67	x
millipede	kolkol	32	24	17	35	31	66	x
mouse	bilduop	32	25	17	35	31	68	x
rank 2	kaar	32	26	17	35	31	69	x
table	jön	32	27	17	20	6	70	x
pail	took	32	34	38	33	19	71	x
cat	nyaw	32	35	17	35	31	72	x
steamer	babur	32	35	25	35	31	73	x
pig	diär	32	41	17	35	19	74	x
Feb/Mar/Apr	mäy	32	49	17	35	31	75	
mother	man	32	49	17	35	31	75	
tiger	kuac	32	49	17	35	31	75	
tree05	dhuony	32	49	17	35	31	75	
tree06	gok	32	49	17	35	31	75	
tree07	mëth	32	49	17	35	31	75	
zebra	cotrial	32	49	17	35	31	75	
sun	cän	32	50	17	35	19	79	x
heel	ulciök	32	50	17	10	31	78	x

elbow	c <u>i</u> el	32	50	17	32	31	76	x
guitar	thuom	32	50	17	35	31	77	x
mosquito	ny <u>i</u> i <u>th</u>	32	58	17	35	31	80	x
night	wa <u>a</u> r	32	62	17	35	31	81	x
pot	dha <u>a</u> r	33	51	25	35	31	82	x
cup2	li <u>e</u> r	34	21	17	35	31	83	x
plant	d <u>e</u> y	35	13	7	35	31	84	x
man	wut	36	21	17	35	31	85	x
knife	ṛ <u>o</u> m	37	8	17	35	31	86	x
cloth	bi <u>i</u> /bi <u>y</u>	38	15	17	35	31	87	x
chair	k <u>o</u> m	39	18	17	35	31	88	x
hunter/bow	b <u>a</u> r	40	39	25	35	31	89	x
egret	bö <u>o</u> ṅ	41	21	17	35	31	90	x
pond	l <u>ö</u> l	41	35	17	35	31	91	x
insignif. thing	ba <u>ṅ</u>	42	50	17	22	31	92	x
kind/type	t <u>ä</u> ä	43					93	x
finger	ya <u>t</u>	44	21	17	35	31	94	x
tree15	jiath	45	50	25	35	31	95	x
erection	t <u>ä</u> t	46	21	17	35	31	96	x
narrows	m <u>ä</u> t	46	21	20	35	31	97	
slap	p <u>ä</u> t	46	21	20	35	31	97	
valley	t <u>ä</u> p	46	30	37	35	27	98	x
dirt	tu <u>ä</u> k	46	50	17	35	31	99	
neck	ṛu <u>ä</u> k	46	50	17	35	31	99	
lung	pu <u>ä</u> th	47	21	17	9	31	100	x
leader	ku <u>a</u> r	48	61	31	35	31	101	x
judge	ku <u>a</u> ar <u>l</u> uk	49	63	17	24	31	102	x
goat2	d <u>e</u> l	50	52	36	35	14	103	x
body	pu <u>o</u> ny	51	42	17	35	31	104	x
knee	mu <u>o</u> l	51	43	17	14	31	105	x
dish	tu <u>o</u> k	52	50	29	10	31	106	x
dirt2	mun	53	11	17	35	31	107	x
May/Jun/Jul	ru <u>e</u> l	54	49	17	35	7	108	x
arm from shoulder	t <u>ë</u> t	55	21	17	35	31	109	x
house	du <u>e</u> l	55	50	39	35	31	110	x
fish	r <u>e</u> c	56	4	17	35	8	111	x
song	di <u>t</u>	56	7	9	35	12	112	x
bird	di <u>t</u>	56	7	17	35	31	113	x
snake	th <u>o</u> l	56	8	17	35	31	114	x
nose	wum	56	10	17	35	31	115	x
chin	t <u>i</u> k	56	16	17	18	31	116	
head	w <u>i</u> c	56	16	17	18	31	116	
meat	ri <u>ṅ</u>	56	16	24	35	31	117	x
child	ga <u>t</u>	56	21	9	35	4	118	x



size	peek	56	21	17	35	19	121	x
spit from cough	kiɛl	56	21	17	35	22	122	x
bean	ŋɔ̄ar	56	21	17	9	31	119	x
arm (upper)	wuɔ̄k	56	21	17	31	31	120	x
bark (tree)/peel	kɔ̄m	56	21	17	35	31	123	
branch	nɔ̄äk	56	21	17	35	31	123	
bump (bruise)	pɔ̄ny	56	21	17	35	31	123	
color	biɛl	56	21	17	35	31	123	
fly	luaŋ	56	21	17	35	31	123	
gazelle	kɛw	56	21	17	35	31	123	
name	ciɔ̄t	56	21	17	35	31	123	
snot	thuny	56	21	17	35	31	123	
tray	pɔ̄t	56	21	17	35	31	123	
dream	läk	56	21	19	35	31	124	x
grass	juac	56	21	32	35	31	125	x
peace	mal	56	24	17	35	31	126	x
tree01	kɔ̄ar	56	28	17	16	19	128	x
boo-boo	buɔ̄t	56	28	17	35	31	127	
shirt	luɔ̄t	56	28	17	35	31	127	
bag	gök	56	33	16	35	29	129	x
thief	wɔ̄n	56	35	17	35	7	130	x
husband	cɔ̄w	56	44	17	35	31	131	x
buffalo	mök	56	45	17	35	28	132	x
dog	jiök	56	45	23	28	31	133	x
animal	ley	56	48	17	35	31	134	x
nightmare	pɔ̄r	56	49	17	10	31	136	x
giraffe	guc	56	49	17	35	31	135	x
conflict	tɛr	56	49	24	35	31	137	x
load	deth	56	49	32	28	19	138	x
marriage	kuën	56	49	32	35	31	139	x
desert	pan	56	50	17	35	2	140	x
mountain	päm	56	60	17	35	15	141	x
navel	lɔ̄ok	57	49	17	35	19	142	x
tortoise	kuëët	57	49	17	35	25	143	x
vulture	kaat	57	49	17	35	31	144	x
bee	tuaar	57	51	17	35	31	145	
place	guääth	57	51	17	35	31	145	
bull2	tuut	57	53	17	35	31	146	x
bone	cɔ̄ɣ	58	37	17	35	31	147	x
belly	jic	58	49	17	35	31	148	x
yawn	ŋaam	59	21	17	35	31	149	x
tree11	këc	60	21	17	35	8	150	x
medicine	wäl	60	41	24	35	31	151	x
ash (wood)	ŋëëth	61	36	17	35	31	152	x

childless widow	kĕĕ	62	32	17	35	1	153	x
leopard	thoän	63	28	17	35	31	154	x
hyena	yak	64	21	2	35	31	155	x
bear	læt	65	49	17	35	31	156	x
hippo	row	66	19	17	35	18	157	x
boy	dhöl	67	45	17	35	31	158	x
tongue	lep	68	1	17	35	31	159	x
gourd	guey	69	5	17	35	31	160	x
scorpion	jiith	70	54	17	35	31	161	x
tree13	thow	71	9	32	35	31	162	x
judgement	luk	72	10	17			163	x
hole	puul	73	56	17	35	31	164	x
judge2	muukluk	74	40	17	34	30	165	x
sea	kiir	75	54	17	35	31	166	x
necklace	tiik	75	57	17	35	31	167	x
finger nail	riöp	76	20	35	15	31	168	x
centipede	närmuon	76	21	17	35	31	169	x
tree14	buäw	77	31	33	7	31	170	x
ant	ɲiɛc	78	21	17	35	31	171	
sheep	roam	78	21	17	35	31	171	
cough	käk	78	21	19	35	31	172	x
skin	guop	78	28	17	35	31	173	x
ash (dung)	puok	78	28	34	35	23	174	x
elephant	guor	78	43	30	35	31	175	x
divinity	kuoth	78	49	17	35	31	176	x
cotton	lath	79	2	17	35	3	177	x
nonsense2	theluoɬ	79	35	17	35	31	178	x
ocean	bäbdit	79	35	17	35	31	179	x
front of body	bap	79	50	17	35	2	181	x
brother	dōmar	79	50	17	35	31	180	x
brother2	gatmar	79	50	31	12	31	182	x
friend	määth	80	21	17	35	31	183	
homosexual	koor	80	21	17	35	31	183	
door	thiik	80	59	12	35	31	184	x
shoe	war	81	21	17	11	31	185	x
flag	bɛɛr	82	51	17	35	31	186	x
monkey	gook	83	21	17	23	19	188	x
itinerant	look	83	21	17	35	21	187	x
September	laath	84	21	28	35	31	189	x
spoon2	guëk	85	21	17	35	31	190	x
barn	luak	86	50	17	29	13	191	x
dung	wäär	87	21	17	19	13	192	x
punch	piäm	88	21	17	9	31	193	x
thief2	cuar	89	21	17	25	31	194	x

bull1	thək	90	50	8	35	31	195	x
thorn	kuook	91	21	17	35	31	196	x
mouth	thok	92	14	17	6	31	197	x
prophet	gök	92	21	17	35	31	198	x
cup3 (iron)	yïöm	93	21	17	35	31	199	
stone	döl	93	21	17	35	31	199	
village	wec	94	49	17	35	31	200	x
tooth	lec	95	49	24	3	20	201	x
dam	kek	96	47	17	21	31	202	x
tree12	queer	96	51	17	35	31	203	x
river	yieer	97	49	17	35	31	204	x
rank 4	bok	98	49	22	35	31	205	x
woman	ciek	99	49	25	35	31	206	x
cow	yaŋ	99	50	25	35	31	207	x
person	raan	99	51	26	35	31	208	x
								189

In Table 44, the columns representing the changes between forms are listed along with the numbers that correspond to them when they are alphabetized and each discrete process counted.

**Table 46**  
**Noun Classes Numbered**

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English	np ch	np#	gs ch	gs#	gp ch	gp#	ls ch	ls#	lp ch	lp#
buttock	b	1	ka	21	b-/sl/ni	5	y	35	b/pl15	2
eye	b	1	sing	49	sl/ni	31	ka	10	y	31
fire/gun	b	1	sl	50	ni	17	y	35	y	31
crocodile	b	1	sl	50	ni	17	y	35	y	31
knot (in tree)	b-	2	ka	21	b/ni	1	y	35	y	31
food	b-	2	sing	49	sl	25	y	35	y	31
breast	b-	2	di6	16	sl/b/ni	27	y	35	y	31
moon	b/con10	3	con10	5	ni	17	y	35	y	31
girl	b/di16/con8	4	sing	49	con6	10	sl	28	y	31
leg	b/dim1	5	ka	21	ni	17	y	35	y	31
widow	b-/dim2/con16	6	ka/sl/dim2	38	ni	17	y	35	y	31
shoulder	b/pl12	7	sing	49	b-/pl4/ni	4	y	35	y	31
leaf	b/pl12/con4	8	-ka-	22	plur	24	y	35	-ni-	9
face	b/pl13	9	sing	49	ni	17	y	35	y	31
sneeze	b/pl13	9	ka	21	sl/ni	31	y	35	y	31
milk	b/pl15	10	sl	50	plur	24	y	35	ni	7
fence	b/pl15	10	sing	49	ni	17	y	35	y	31
chest	b/pl15/con2	11	con2	6	ni	17	y	35	sl-	20
fruit2	b-/pl20/con16	12	sing	49	-ka-	15	y	35	-ni--	10
fruit	b-/pl20/pl12/con4	13	sing	49	plur	24	-ka-	12	-ni-	9
Nov/Dec/Jan	b/pl21	14	sing	49	ni/b/pl16	18	b-/pl30	2	ni-/b/pl21	11
village	b/pl23	15	di8	18	ni	17	y	35	y	31
heart	b/pl23	15	di8	18	ni	17	y	35	y	31
firstborn	con14	16	ka/sl/pl15	39	ni	17	y	35	y	31
place/time	con15	17								

drum	di13	18	di14	10	b/ni	1	y	35	y	31
spoon	di13	18	di14	10	ni	17	y	35	y	31
splash (little)	di14	19	ka	21	ni	17	y	35	y	31
cup	di14	19	ka	21	ni	17	y	35	y	31
rat	di14	19	pl32	46	ni	17	y	35	y	31
windstorm	di14	19	sl/di14	55	ni	17	y	35	y	31
lion	di22	20	sing	49	ni	17	y	35	ni-	8
snail	di23/pl31	21	ka	21	ni	17	y	35	y	31
back	di24/pl24	22	sing	49	ni	17	y	35	y	31
sound	di24/pl24/con2	23	di15/pl21/con2	12	ni	17	dim1/di17/con17	8	y	31
hair	di4	24	b	1	ni	17	ka	10	y	31
filled hole	di6	25	di7	17	ni	17	y	35	y	31
cloud/fog	di7	26	di7	17	ni	17	y	35	y	31
sister	di7	26	sing	49	ni	17	y	35	y	31
nonsense3	di9	27	ka	21	dim2/ni	14	y	35	y	31
wind	dim1/di10	28	b/pl22	3	b/pl19/pl15/ ni	3	y	35	y	31
cane	dim2	29	ka	21	ni	17	y	35	sl/ni-	24
blood	dim2	29	sing	49	ni	17	b	1	y	31
tamarind	dim2	29	ka/dim2	28	ni	17	di8*	5	y	31
fat/oil	dim2	29	ka	21	ni	17	ka-	11	y	31
injection	dim2	29	ka	21	ni	17	ka-	11	y	31
scab	dim2	29	ka/dim2	28	ni	17	y	35	y	31
sand/clay	dim2	29	ka/dim2	28	ni	17	y	35	y	31
magician	dim2	29	ka/dim2	28	ni	17	y	35	y	31
water plant	nfp	30	ka/sl-	36	ni	17	ni/di11	26	di11	5
bark (dog)	nfp	30	ka/pl11	29	ni	17	y	35	y	31

life	nfp	30	sing	49			ka/con13	14		
flour (wheat)	nfp	30	ka	21			y	35		
grunt	nfp	30	ka	21			y	35		
bad blood	nfp	30	ka	21			y	35		
end of milking	nfp	30	sing	49			y	35		
water	nfs	31			di5/ni/con-	11			y	31
coll. of things	nfs	31			ni	17			y	31
money	nfs	31			ni	17			y	31
table	ni	32	ka/di23	27	ni	17	ka/pl28	20	di23/pl28	6
hoof	ni	32	ka	21	ni	17	y	35	ni	7
umbilical cord	ni	32	ka/con13	24	ni	17	y	35	pl18	16
butterfly	ni	32	ka	21	ni	17	ka-	11	pl23	17
pail	ni	32	ka/pl30/syll	34	sl- /pl30/syll	38	sl/pl24/syll-	33	sl	19
goat	ni	32	ka	21	ni	17	y	35	sl	19
pig	ni	32	pl15	41	ni	17	y	35	sl	19
sun	ni	32	sl	50	ni	17	y	35	sl	19
rank 3	ni	32	ka	21	sl	25	pl15	27	sl-/pl15	26
oxbow lake	ni	32	ka	21	ni	17	di1/ka-	4	y	31
ring	ni	32	ka	21	ni	17	ka	10	y	31
heel	ni	32	sl	50	ni	17	ka	10	y	31
bug	ni	32	ka	21	ni	17	ka-	11	y	31
growl	ni	32	ka	21	ni	17	ka-	11	y	31
potato	ni	32	ka	21	ni	17	ka-	11	y	31
locust	ni	32	di8	18	di8/ni	13	ka/b/pl23/dim2/d i23	13	y	31
camel	ni	32	ka	21	ni	17	ka-/di9	17	y	31

tree08	ni	32	dill	8	ni	17	sl	28	y	31
sky	ni	32	ka	21	ni	17	sl-/con13	30	y	31
elbow	ni	32	sl	50	ni	17	sl/ka/con13	32	y	31
needle	ni	32	ka/con1	23	con1	6	y	35	y	31
banana	ni	32	ka	21	ni	17	y	35	y	31
tree04	ni	32	ka	21	ni	17	y	35	y	31
flower	ni	32	ka	21	ni	17	y	35	y	31
rank 1	ni	32	ka	21	ni	17	y	35	y	31
splash (anim)	ni	32	ka	21	ni	17	y	35	y	31
horn (flute)	ni	32	ka	21	ni	17	y	35	y	31
ruler	ni	32	ka	21	ni	17	y	35	y	31
tree02/star	ni	32	ka	21	ni	17	y	35	y	31
fiance	ni	32	ka	21	ni	17	y	35	y	31
tree10	ni	32	ka	21	ni	17	y	35	y	31
splash (big)	ni	32	ka	21	ni	17	y	35	y	31
hoof	ni	32	ka	21	ni	17	y	35	y	31
foot	ni	32	ka	21	ni	17	y	35	y	31
hand	ni	32	ka	21	ni	17	y	35	y	31
cookie	ni	32	ka	21	ni	17	y	35	y	31
tree09	ni	32	ka	21	ni	17	y	35	y	31
spit	ni	32	ka	21	ni	17	y	35	y	31
sept/oct	ni	32	ka	21	ni	17	y	35	y	31
pillow	ni	32	ka	21	ni	17	y	35	y	31
tree03	ni	32	ka	21	ni	17	y	35	y	31
picture	ni	32	ka	21	ni	17	y	35	y	31
goose	ni	32	ka	21	ni	17	y	35	y	31
millipede	ni	32	ka/con13	24	ni	17	y	35	y	31
mouse	ni	32	ka/con3	25	ni	17	y	35	y	31

rank 2	ni	32	ka/di19	26	ni	17	y	35	y	31
cat	ni	32	ka/sl	35	ni	17	y	35	y	31
zebra	ni	32	sing	49	ni	17	y	35	y	31
tree05	ni	32	sing	49	ni	17	y	35	y	31
tree06	ni	32	sing	49	ni	17	y	35	y	31
tiger	ni	32	sing	49	ni	17	y	35	y	31
Feb/Mar/Apr	ni	32	sing	49	ni	17	y	35	y	31
mother	ni	32	sing	49	ni	17	y	35	y	31
tree07	ni	32	sing	49	ni	17	y	35	y	31
guitar	ni	32	sl	50	ni	17	y	35	y	31
mosquito	ni	32	sl-/di5	58	ni	17	y	35	y	31
night	ni	32	sl-/pl18	62	ni	17	y	35	y	31
hammer	ni	32	ka	21	pl22/ni	21	y	35	y	31
ear	ni	32	ka	21	plur	24	y	35	y	31
basket	ni	32	ka	21	sl	25	y	35	y	31
steamer	ni	32	ka/sl	35	sl	25	y	35	y	31
pot	ni/b	33	sl-	51	sl	25	y	35	y	31
cup2	ni/b/pl4	34	ka	21	ni	17	y	35	y	31
plant	ni/con12/syll	35	di17/pl4/con3	13	con16/syll-	7	y	35	y	31
man	ni/con3	36	ka	21	ni	17	y	35	y	31
knife	ni/di11	37	di11	8	ni	17	y	35	y	31
cloth	ni/di7	38	di5	15	ni	17	y	35	y	31
chair	ni/di8	39	di8	18	ni	17	y	35	y	31
hunter/bow	ni/pl15	40	ka/sl/pl15	39	sl	25	y	35	y	31
egret	ni/pl28	41	ka	21	ni	17	y	35	y	31
pond	ni/pl28	41	ka/sl	35	ni	17	y	35	y	31
insignif. thing	ni/syll	42	sl	50	ni	17	ka/sl-	22	y	31



kind/type	nodif	43								
finger	pl12	44	ka	21	ni	17	y	35	y	31
tree15	pl12/con4	45	sl	50	sl	25	y	35	y	31
valley	pl15	46	ka/pl15	30	sl/pl18/ni	37	y	35	sl-/pl15/ni*	27
erection	pl15	46	ka	21	ni	17	y	35	y	31
neck	pl15	46	sl	50	ni	17	y	35	y	31
dirt	pl15	46	sl	50	ni	17	y	35	y	31
narrows	pl15	46	ka	21	pl18/ni	20	y	35	y	31
slap	pl15	46	ka	21	pl18/ni	20	y	35	y	31
lung	pl16	47	ka	21	ni	17	dim2	9	y	31
leader	pl18	48	sl/pl18	61	sl/ni	31	y	35	y	31
judge	pl18/syll-	49	sl-/pl18/dim2	63	ni	17	ka/sl/dim2/pl15	24	y	31
goat2	pl2/con7	50	sl/b	52	sl/ni/pl17	36	y	35	ni-/pl19	14
knee	pl21	51	pl22	43	ni	17	ka/con13	14	y	31
body	pl21	51	pl21	42	ni	17	y	35	y	31
dish	pl23	52	sl	50	sl-/con3	29	ka	10	y	31
dirt2	pl32	53	di14/sl	11	ni	17	y	35	y	31
May/Jun/Jul	pl7	54	sing	49	ni	17	y	35	ni	7
arm from shoulder	pl9	55	ka	21	ni	17	y	35	y	31
house	pl9	55	sl	50	sl/pl9/ni	39	y	35	y	31
desert	sl	56	sl	50	ni	17	y	35	b/pl15	2
child	sl	56	ka	21	con5	9	y	35	con19	4
thief	sl	56	ka/sl	35	ni	17	y	35	ni	7
fish	sl	56	b/pl4	4	ni	17	y	35	ni-	8
song	sl	56	di1	7	con5	9	y	35	ni/con19	12
mountain	sl	56	sl/pl15	60	ni	17	y	35	pl15	15
tree01	sl	56	ka/dim2	28	ni	17	ka/di8	16	sl	19

load	sl	56	sing	49	sl-/ni	32	sl	28	sl	19
size	sl	56	ka	21	ni	17	y	35	sl	19
spit from cough	sl	56	ka	21	ni	17	y	35	sl-/di1	22
buffalo	sl	56	pl28	45	ni	17	y	35	sl-/pl28	28
bag	sl	56	ka/pl27	33	ka/sl-	16	y	35	sl/pl28/ni	29
bean	sl	56	ka	21	ni	17	dim2	9	y	31
nightmare	sl	56	sing	49	ni	17	ka	10	y	31
chin	sl	56	di6	16	ni	17	ka/dim2	18	y	31
head	sl	56	di6	16	ni	17	ka/dim2	18	y	31
dog	sl	56	pl28	45	pl28/ni	23	sl	28	y	31
arm (upper)	sl	56	ka	21	ni	17	sl/dim2	31	y	31
bird	sl	56	di1	7	ni	17	y	35	y	31
snake	sl	56	di11	8	ni	17	y	35	y	31
nose	sl	56	di14	10	ni	17	y	35	y	31
color	sl	56	ka	21	ni	17	y	35	y	31
name	sl	56	ka	21	ni	17	y	35	y	31
gazelle	sl	56	ka	21	ni	17	y	35	y	31
bark (tree)/peel	sl	56	ka	21	ni	17	y	35	y	31
fly	sl	56	ka	21	ni	17	y	35	y	31
branch	sl	56	ka	21	ni	17	y	35	y	31
tray	sl	56	ka	21	ni	17	y	35	y	31
bump (bruise)	sl	56	ka	21	ni	17	y	35	y	31
snot	sl	56	ka	21	ni	17	y	35	y	31
peace	sl	56	ka/con13	24	ni	17	y	35	y	31
boo-boo	sl	56	ka/dim2	28	ni	17	y	35	y	31
shirt	sl	56	ka/dim2	28	ni	17	y	35	y	31

husband	sl	56	pl23/di21/di3/c on3	44	ni	17	y	35	y	31
animal	sl	56	pl8/con12	48	ni	17	y	35	y	31
giraffe	sl	56	sing	49	ni	17	y	35	y	31
dream	sl	56	ka	21	pl15/ni	19	y	35	y	31
meat	sl	56	di6	16	plur	24	y	35	y	31
conflict	sl	56	sing	49	plur	24	y	35	y	31
grass	sl	56	ka	21	sl-/ni	32	y	35	y	31
marriage	sl	56	sing	49	sl-/ni	32	y	35	y	31
navel	sl-	57	sing	49	ni	17	y	35	sl	19
tortoise	sl-	57	sing	49	ni	17	y	35	sl/ni/b	25
vulture	sl-	57	sing	49	ni	17	y	35	y	31
place	sl-	57	sl-	51	ni	17	y	35	y	31
bee	sl-	57	sl-	51	ni	17	y	35	y	31
bull2	sl-	57	sl-/b/di14	53	ni	17	y	35	y	31
bone	sl/b	58	ka/sl/b	37	ni	17	y	35	y	31
belly	sl/b	58	sing	49	ni	17	y	35	y	31
yawn	sl-/b	59	ka	21	ni	17	y	35	y	31
tree11	sl/b-	60	ka	21	ni	17	y	35	ni-	8
medicine	sl/b-	60	pl15	41	plur	24	y	35	y	31
ash (wood)	sl-/b-	61	ka/sl-	36	ni	17	y	35	y	31
childless widow	sl-/b/con16	62	ka/pl2	32	ni	17	y	35	b	1
leopard	sl/b/dim2	63	ka/dim2	28	ni	17	y	35	y	31
hyena	sl/b/pl15	64	ka	21	b-/pl18/ni	2	y	35	y	31
bear	sl/b/pl2	65	sing	49	ni	17	y	35	y	31
hippo	sl/b/pl23/con2	66	di8/con3	19	ni	17	y	35	pl28	18
boy	sl/b-/pl27	67	pl28	45	ni	17	y	35	y	31

tongue	sl/b/pl3	68	b	1	ni	17	y	35	y	31
gourd	sl/con11	69	con10	5	ni	17	y	35	y	31
scorpion	sl-/di1	70	sl-/di1	54	ni	17	y	35	y	31
tree13	sl/di11	71	di11/con3	9	sl-/ni	32	y	35	y	31
judgement	sl/di14	72	di14	10	ni	17				
hole	sl-/di14	73	sl-/di14	56	ni	17	y	35	y	31
judge2	sl-/di14/syll-	74	ka/syll-	40	ni	17	syll	34	syll	30
sea	sl-/di2	75	sl-/di1	54	ni	17	y	35	y	31
necklace	sl-/di2	75	sl-/di2	57	ni	17	y	35	y	31
finger nail	sl/dim1	76	dim1	20	sl-/ni/di23	35	ka/di23	15	y	31
centipede	sl/dim1	76	ka	21	ni	17	y	35	y	31
tree14	sl/dim1/pl16	77	ka/pl16/con3	31	sl-/ni/di11	33	dim1/con3	7	y	31
ash (dung)	sl/dim2	78	ka/dim2	28	sl-/ni/di14	34	y	35	sl/dim2/ni*	23
ant	sl/dim2	78	ka	21	ni	17	y	35	y	31
sheep	sl/dim2	78	ka	21	ni	17	y	35	y	31
skin	sl/dim2	78	ka/dim2	28	ni	17	y	35	y	31
divinity	sl/dim2	78	sing	49	ni	17	y	35	y	31
cough	sl/dim2	78	ka	21	pl15/ni	19	y	35	y	31
elephant	sl/dim2	78	pl22	43	sl-/di12/ni	30	y	35	y	31
front of body	sl/ni	79	sl	50	ni	17	y	35	b/pl15	2
cotton	sl/ni	79	b/pl15	2	ni	17	y	35	b-/pl18	3
brother2	sl/ni	79	sl	50	sl/ni	31	-ka-	12	y	31
ocean	sl/ni	79	ka/sl	35	ni	17	y	35	y	31
nonsense2	sl/ni	79	ka/sl	35	ni	17	y	35	y	31
brother	sl/ni	79	sl	50	ni	17	y	35	y	31
door	sl-/ni	80	sl-/di7	59	di7/ni	12	y	35	y	31
homosexual	sl-/ni	80	ka	21	ni	17	y	35	y	31
friend	sl-/ni	80	ka	21	ni	17	y	35	y	31

shoe	sl/ni/b	81	ka	21	ni	17	ka-	11	y	31
flag	sl-/ni/b	82	sl-	51	ni	17	y	35	y	31
monkey	sl-/ni/di8	83	ka	21	ni	17	ka/sl-/di8	23	sl	19
itinerant	sl-/ni/di8	83	ka	21	ni	17	y	35	sl/b/dim1/pl 24	21
September	sl-/ni/pl14	84	ka	21	sl/b-/pl10	28	y	35	y	31
spoon2	sl/pl1	85	ka	21	ni	17	y	35	y	31
barn	sl/pl13	86	sl	50	ni	17	sl-	29	ni-/pl8*	13
dung	sl-/pl13	87	ka	21	ni	17	ka-/pl15	19	ni-/pl8	13
punch	sl/pl15	88	ka	21	ni	17	dim2	9	y	31
thief2	sl/pl17	89	ka	21	ni	17	ka/sl/pl17	25	y	31
bull1	sl/pl18	90	sl	50	con3/ni	8	y	35	y	31
thorn	sl-/pl19	91	ka	21	ni	17	y	35	y	31
mouth	sl/pl26	92	di20/pl27	14	ni	17	dim1	6	y	31
prophet	sl/pl26	92	ka	21	ni	17	y	35	y	31
stone	sl/pl28	93	ka	21	ni	17	y	35	y	31
cup3 (iron)	sl/pl28	93	ka	21	ni	17	y	35	y	31
village	sl/pl5/con9	94	sing	49	ni	17	y	35	y	31
tooth	sl/pl6	95	sing	49	plur	24	b-/pl8/con18	3	sl-	20
dam	sl/pl7	96	pl7	47	ni	17	ka/pl9	21	y	31
tree12	sl/pl7	96	sl-	51	ni	17	y	35	y	31
river	sl-/pl7	97	sing	49	ni	17	y	35	y	31
rank 4	slsl/ni/pl25	98	sing	49	pl23/ni	22	y	35	y	31
woman	sup	99	sing	49	sl	25	y	35	y	31
cow	sup	99	sl	50	sl	25	y	35	y	31
person	sup	99	sl-	51	sl-	26	y	35	y	31